COMPUTERWORLD

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NEWSPAPER

Vote Recap

Officials Stress Public Education

By Edith Holmes
Of the CW Staff

With November elections less than a month away, counties across the country are emphasizing the education of election personnel and voters in an attempt to minimize the data entry problems that plagued primary races throughout the summer.

More often than not, election snafus resulted from errors caused by election officials and voters unfamiliar with computerized systems for vote tabulation and compilation, a recent *Computerworld* survey indicated.

Whether the original ballot cast is a punch card or a paper form, "educating the people who must work with the system becomes the single most important factor in computerizing the vote count," commented Tom Moore, registrar-at-large for Hamilton County in Chattanooga, Tenn.

In converting 23 of the county's 78 precincts to a fully automated voting and election system for the primary elections in August, Moore said some eight or nine training sessions were held to familiarize officials with the punch card system.

"Then we had to prepare the public for the substitution of Computer Election Systems, Inc.'s Votomatics for the familiar lever machines," he explained. Media exposure and demonstrations in each precinct resulted in a favorable response to the system of some 90% of the voters surveyed at the polls, he indicated.

"The August ballots were the most complicated we've ever had," Moore said. "Running two election methods simultaneously, we had 23 precincts on Votomatics and 55 using traditional lever machines."

Recorded on magnetic tape, the results from the precincts with lever devices were merged with those from the punch card system in two IBM 370/145s.

With the entire county using punch

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On the Inside This Week

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VS Didn't Measure Up, Firm Tells BBUG Session —*Page 14*

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IBM 3850 Extends VS to Tape Cartridge

By Vic Farmer
Of the CW Staff

WHITE PLAINS, N.Y. – Expanding on several previous nonstandard concepts such as the 96-column card and the 3348 data module, IBM has introduced still another idea in information storage – the data cartridge and "virtual mass storage."

The IBM 3850 mass storage system announced last week takes virtual storage one step farther from the mainframe. By using 3330 disk drives as a "staging" area, information contained on tape cartridges can be mechanically retrieved and loaded onto working disk packs under program control.

The system is said to create the image of many more disk drives than are actually available by continuously trading information with the mass storage facility and by using the same area on a disk pack to hold different data files at different times. This eliminates the need to dedicate space to a single file, according to IBM.

Up to 50M bytes of data are stored on the three-in. wide tape spool (770 in. long) "in much the same way [data] is recorded on disk." Each cartridge is organized into 202 cylinders of data and each cylinder is identified by a code along the edge of the tape.

Two cartridges, a "mass storage volume," provide the storage equivalent of a 100M-byte disk pack, IBM said.

Four basic models provide a character capacity of 35.3 billion bytes (706 cartridges), 102.2 billion bytes (2,044 car-

(Continued on Page 5)

Each IBM 3851 mass storage facility has two access devices, one of which is shown here with a data cartridge, that can move horizontally and vertically and can rotate 180 degrees to pick up a cartridge.

Afips Manual on Security Details Self-Audit Method

By Nancy French
Of the CW Staff

MONTVALE, N.J. – As an alternative to a typical $4,000 consultant's fee for a security audit, a 110-page *System Review Manual on Security* provides the computer center manager with instructions for doing an audit himself.

Funded and released by the American Federation of Information Processing Societies (Afips), the manual established as its guiding principle the premise that "no system can completely protect against all possible threats."

Attempting this would be "to overdo," the manual said, and it suggested the DP manager should aim instead "to make the cost of penetration exceed the value of the information obtained."

Each computer center, the manual explained, is a unique case. Threats faced are a function of location, employees, relationships with other companies, workload, equipment and physical facilities.

Threats "change over time" due to changes in these elements, and regular monitoring should be able to detect even the most subtle changes almost immediately, the manual said.

A Dynamic Guide

Five years in preparation, the manual is organized to serve as a dynamic guide through risk analysis, risk ordering and audit and review procedures, with checklists on matters ranging from personnel, physical security, operating systems, access controls, programs, communications, storage and input/output to insurance.

The manual's authors broke the system review process into six basic steps: threat analysis, threat ordering, query review, literature search, security audit and report review.

Security is organized into 14 brief chapters, each containing general statements that place the checklists which follow in proper context. When answered, each checklist virtually sets up a plan for the center manager to institute in-house.

Queries in any given checklist are ordered from the most universally applicable through those that apply only when the most stringent protection considerations are needed to counter severe high-level threats.

As an example, question one in chapter 7, "Access Controls," asks: Do you have a full-time librarian? Who enforces access

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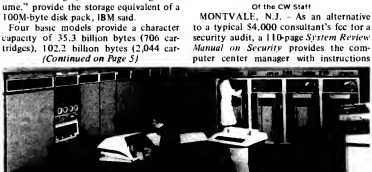

The Decsystem-1080 is surrounded by Univac disk drives, Storage Technology tape drives and incorporates a PDP-11 mini.

DEC Provides Staged Upgrades To KL10-Based Configurations

By Ronald A. Frank
Of the CW Staff

MARLBORO, Mass. – Users planning to upgrade their time-sharing Decsystem-10s can grow into Digital Equipment Corp.'s (DEC) new KL10 mainframe in stages.

As part of its Decsystem-10 upgrade announcement [CW, Oct. 9], DEC said first deliveries of the KL10 mainframe will begin in June 1975. But users who want to upgrade their existing systems can install a 1060L, which includes the new RP04 3330-type disk or TU 70 1,600 bit/in. magnetic tape subsystems, while continuing to use their earlier K110 mainframes.

A typical 1080 configuration, including the KL10 CPU, 200M-character disk subsystem, 128K memory, two tape drives, 32 communications lines, line printer and card reader, will cost about $725,000.

On the high end, a 1090 configuration with the KL10, 256K memory, 1M word RSO4 fixed-head swapping disk, 800M-character disk, six tape drives, 96 communications lines, two line printers and card reader will cost about $1.5 million, DEC said.

Lease/purchase plans ranging from three to seven years are available. A typical five-year plan for a $1 million system would cost $23,500/mo plus a $4,000/mo to $5,000/mo field service charge. At the end of the plan the user could assume ownership after an additional "transfer charge" payment of 10%, a DEC spokesman said.

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Out-of-Court Settlement Near?

IBM Agrees to Yield Installed Base Data

By Edith Holmes
Of the CW Staff

NEW YORK – IBM and the Justice Department appeared to move closer to an out-of-court settlement during a pretrial hearing of the antitrust cese held before the U.S. District Court here recently.

At the Oct. 4 hearing before Chief Federal District Judge David N. Edelstein, the corporation and the government reported they had been able to establish virtually all elements of an agreement in which IBM would produce records of its installed equipment base on a systems basis for the Justice Department.

On its part, the government agreed to answer IBM's questions about the criteria used by the Justice Department to assign specified DP equipment to a particulsr market or markets.

Representatives for the two parties worked until midnight for severel nights to solve these problems, Thomes D. Barr, lead counsel for IBM, told the court.

Expressing his hope that the experience of IBM and the Justice Department in resolving the systems information issue could lead them to address other problems as well, he commented that the parties had used the week more profitebly than they would heve if they had been engaged in litigation.

Similarly, when the government requested permission to postpone the presentation of its pretrial brief until a hearing could be held to discuss the real differences in the statements of issues filed by Justice and IBM [CW, Oct. 9], Barr remarked, "I believe that our discussion this week went beyond the issue just at hsnd and that both of us would like to see how much more we can work out between ourselves."

He suggested the corporation and the government suspend their present hearing schedule and sit down for several days to see "just how much we can work out."

Setting the next pretrial hearing for Oct. 16, Edelstein said the matters to be discussed might be so substantial that the hearing would have to be extended to Oct. 17 or 18.

In eddition, he estimated the entire case will take one year to try, and another year would be needed before he could reach a decision.

Noting that Barr was under no legal restraint to explain to the judge the nature of the agreementa made by the government and IBM that week, Thomas Franklin, an attorney attending the hearing for International Deta Corp., suggested IBM's counsel made his speech to the court for the benefit of the press.

"Barr could have simply said, 'Yes, it'a all right with me if the Justice Department files its brief leter then Oct. 10, and I agree to an extension.' But instead, he delivered a long speech about how much they'd agreed to as well as how much they could agree to and suggested that the schedule be suspended," Franklin said.

Because both parties in the case are under court orders not to talk directly to the press, he contended Barr's presentation during an open hearing provided "a clear public indication" that IBM is working to reach some settlement with the Justice Department out of court.

Franklin added Barr may also have acted to reassure stockholders that IBM is concerned with settling its antitrust cases.

Afips Security Manual Details Self-Audit Method

(Continued from Page 1)

controls on the off shifts?

Question 63 asks: Can the security administrator interrogate the system at any time and find out who is logged-on with special privileges and what they are doing?

Once all possible threats are enumerated with the use of the checklist, the next step, according to the manual, is determining the level of the threat which is to be thwarted – from the casual, or amateur, threat posed by a disgruntled employee through the professional, well-financed and dedicated effort of an overzealous competitor.

Authors urged annual reviews of threat lists, with openminded willingness to reclassify and reorder threats.

Since checklists found in chapters four through 13 are phrased in the context of the solution or countermeasure to a given threat, DP managers were urged to keep in the back of their minds the exigency of the matters under consideration.

In the case of threat posed by fire, for example, the questions address such things as dry pipe sprinkler systems, Halon fire bottles and housekeeping practices that avoid large concentrations of inflammables.

Following completion of threat analysis, threat ordering and query review, the audit team should be brought in.

The Afips manual suggested that, while a one-man sudit team would be the ideal, few such well-rounded persons exist. Therefore, a small team of senior, well-seasoned individuals should be assembled to review the installation.

As soon as the audit report is available, it should be reviewed by the DP manager, who may find some security measures require very little trouble and expense to implement.

Other measures, however, may have extensive budget impact or he so expensive that further study may be needed to determine less expensive, alternative solutions, the report stated.

Neither the entire manual nor all of the checklist queries need to be considered by any one user.

The authors suggested some installations may only wish to consider the checklists on integrity of personnel and physical security with possihly some queries on controlled accessibility.

For an organization that participates in a network of data processing installations or for a user who is remotely connected with activities involving multiple users, however, questions of controlled accessibility, communications security and file protection may be highly relevant, the report said.

Copies of the manuel, authored by freelance consultant Robert L. Patrick, are available for $10 each from Afips Press, 210 Summit Ave., 07645.

Church to Investigate Privacy Violations

LOS ANGELES – The Church of Scientology, concerned with what it terms "the use of computers and unverified material fed into them by law enforcement agencies," has formed a National Commission of Law Enforcement and Social Justice to investigate privscy violations.

According to Rev. Lawerence Wilbur, head of the research commission, "the distribution of this false data hes a tendency to act as a pyramid of false reports which jeopardize individuel rights."

The commission will advertise nationally for contact with anyone who has suffered from inaccurate data contained in police files, special hearings held on such cases and the attorneys involved. They will also investigate cases of church harrassment by federal law enforcement agencies, the accuracy and security of federal crime computers and the access to civil intelligence kept by federal agencies.

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PHASE 6 OF SYSTEM LIFE: CONVERSION

When did you make your last "problem-free" conversion?

Your new software only supports ANS COBOL and you have 637 programs in COBOL F.

Your documentation may be somewhere — but it's not up to date.

You're not sure what the new hardware and software will do to your throughput.

Ever since the bloodbath days of conversion to /360, managers have known that Conversion is a mammoth effort requiring a great deal of attention, resources, and testing. Here's where ADR's software products — the Talent Amplifiers — can provide significant assistance. The ADR family of programming aids consists of interrelated software packages that can mechanize most of the chores involved in a Conversion project.

The fundamental task of a COBOL Conversion — finding the code that requires change, converting to new code, and then testing that code — can be largely automated by the MetaCOBOL Translator. One application of the Translator is COBOL-to-COBOL Conversion. Facilities in the Translator are available to intercept any desired COBOL forms and conditionally generate new COBOL. And MetaCOBOL has a library of COBOL-to-COBOL conversion macros to assist you. Or if you're converting to IMS or other DBMS systems, MetaCOBOL's macro library can ease the job. During Conversion, use MetaCOBOL's standards auditing and source code efficiency monitoring facilities to standardize and upgrade the converted code at the same time.

Testing converted programs so that they operate correctly is perhaps your biggest challenge. Here again MetaCOBOL can be a major help. The Test Data Generator (TDG) option of MetaCOBOL uses directives, embedded as comments in the source code, to generate comprehensive test data automatically, making sure that every program path is executed under every significant condition. The Run-Time Debugging Aid (RDA) option of MetaCOBOL complements the TDG. Responding (like TDG) to embedded comments, RDA reports on the internal state of the system and intermediate data values in any desired detail. Thus, during Conversion, complete retesting can be minimized using MetaCOBOL aids.

Finally, to measure the impact of a Conversion in detail after it is implemented, use the COBOL Performance Monitor (CPM) feature of MetaCOBOL to improve the performance of your converted system.

For a big Conversion task, such as to a tele-processing or data-base management system, AUTOFLOW II can automatically generate — from source code — logic charts, program flow charts, data cross-reference analyses (procedure references to data names), and a data map showing the size and location of each data field. This makes it much easier for programmers to find every point in an application affected by a Conversion. The Cross-Program Auditor (CPA) module of AUTOFLOW II tabulates all references to labels or data names that cross program boundaries and helps ascertain structural consistency. The Extended Text Compositor (ETC) option of AUTOFLOW II stores text material, such as program documentation and user manuals, accepts revisions to it, and prints out the revised and renumbered text on demand. The Automated System Charter (ASC) option of AUTOFLOW II can provide system charts and cross-references of system activity for the existing system and then for the converted one, using existing JCL in each case.

The LIBRARIAN is another ADR product that supports Conversion efforts by protecting and managing the source code library. It controls access to the source code, ensuring that two versions of a program are not casually switched, keeps a history of all changes to a program, and provides administrative control of such changes. The LIBRARIAN also permits trial changes to be made to the source code without affecting the production version of the program. And for simple Conversion efforts, The LIBRARIAN'S EDIT command can often do the whole job for you.

Often the critical issue in a Conversion is the converted software's potential impact on system resources. How much more CPU time will CICS or VS require? What will a switch to faster disks and TSO or ASP really do for throughput? The System Analysis Machine (SAM) answers such questions quickly and accurately. With its stored models of IBM hardware and system software, an easy-to-use modeling language in which to describe a projected application, and automatic methods of developing a model of an existing job stream, SAM gets accurate results without requiring long hours of model-building.

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Officials Stress Education to Overcome Vote Snarls

(Continued from Page 1)

cards in November, the whole process should be much easier, Moore remarked.

Overselling?

Dick Vogel of Datamanagement Associates in Colorado Springs, Colo, noted "many of the problems common to computerized election systems occur when a vendor sells some very good equipment to county personnel who don't know how to operate it."

The outside manager of El Paso County's in-house Decsystem-10, Vogel said too many counties swallow the vendor's line: "Just buy this nice box, push this big button and everything will happen the way it's supposed to."

He added that most counties have trouble attracting the qualified data processors they need.

Though the county still uses traditional voting machines, officials rely on their computer system for election return compilations.

Datamanagement Associates accordingly picks up abstracts of vote returns as they come in, keypunches this information on cards and feeds it into the Decsystem10. Hazeltine video display terminals linked to the system by telephone lines display the election results for the news media and at prominent points throughout the county as the computer totals the votes, Vogel said.

In contrast with El Paso's success, inexperience with a key-to-disk system installed in Palm Beach County, Fla., just prior to the election caused a keypuncher to transpose candidate and precinct fields. The single error created an invalid precinct number which went unnoticed by the edit and delayed projected election results for the media by two hours, Ron Cothes, DP manager for the county, said.

"We had to recycle the same batch on tape on our Univac 70/2 to find the error," he remarked.

To prevent this kind of problem from occurring again in November, the county's DP department has designed a more extensive edit system, according to Cothes.

Similarly, Riverside County in California devised a means of checking its displays with a false count after a programming error caused the two top-order number of each total to be omitted from the CRT printouts on election night.

"While nothing was wrong with the vote count itself, it took us two hours to rewrite the display instructions," explained Morton Saultz, county DP manager.

Converting ballot information to paper tape by means of an optical scanning device and running on-line with an IBM 370/158, Saultz said his department is now prepared to execute three test cycles to check for errors prior to each election.

Mix of Equipment

Responsible for coordinating vote counts for a jurisdiction encompassing 172 precincts in Lansing, East Lansing and Meridan, Mich., county clerk John I. Whitmyer deals with a system involving an IBM 370/135, a Honeywell 2015 and a Computer Election Systems Ballotab.

During the primary elections last August, each of these systems tabulated votes in different parts of the county without difficulty, according to Whitmyer. "Our problems occurred when we tried to accumulate information for the summary report to be sent to the media and to election auditors.

"What we failed to do was provide countywide totals on election night," he explained. "We just miscalculated the length of time required to enter data from individual precincts."

Using four terminals in two locations to input data into a single system from the three tabulating units, "we discovered we didn't have enough keyboard capacity," Whitmeyer added. "In November, we'll batch in totals from 21 areas in the county, inputting individual precinct results as time permits."

'Right' Hardware

While conceding education of officials and voters becomes a perennial fsctor in whether a computerized election system will succeed, Mike Griffin, DP manager for Maricopa County, Ariz., emphasized the importance of having the "right" kind of hardware.

Using two Computer Election Systems Ballot Multiplexers (BMXs) to count the county's 200,000 punch card ballots in the September primary, Griffin contended his department avoided problems they could have encountered had they used the card readers on their dual Honeywell 6000s.

Designed specifically to read punch card ballots, the BMX minis make sure ballots being counted are totaled in the correct precinct and run control totals of the number of ballots in each pricinct, he said. Actual tabulating and compilation takes place on the Honeywell system, he added.

"In '70 and again in '72, we used mainframe card readers – first on an IBM, then on our Honeywell machine – but neither worked as well as readers specifically created to handle ballots."

An incident in the Bakersfield, Calif., June primary illustrated Griffin's point. Damaged by voters and in voting machines, 75 punch cards were rejected by the county's IBM 360/40 card reader, according to Gene Wingo, operations supervisor.

Because a six-vote spread in one race made the 75 ballots crucial to the election's outcome, the DP center was under pressure to count them immediately – which they did, Wingo said, but by hand.

Burroughs Ups Prices On Service, Systems

DETROIT – Burroughs has followed the lead of most other mainframe manufacturers by increasing prices from 1% to 10% on computer systems, terminals, peripheral equipment and maintenance. The raises are effective immediately.

A small system will lease for about 1% more, while the cost of leasing or buying a medium-scale system will rise 3% or 6%.

Large systems will cost between 2% to 5% more for purchase or lease, the company said.

Lease Increases

Lease prices of terminals will rise 1% while lease and purchase prices of selected card readers and punches and magnetic tape units will go up 6% to 10%. Other peripheral products will cost 1% more to lease.

Maintenance charges have been increased 5%.

Price increases will take effect on equipment under lease according to contract terms, the company said.

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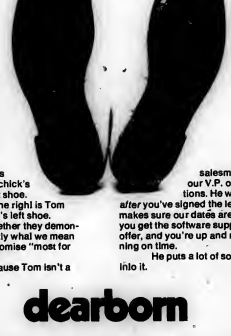

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Data Transferred to Disk

IBM 3850 Extends VS to Tape Cartridges

(Continued from Page 1)

tridges), 169.1 billion bytes (3,382 cartridges) and 236 billion bytes (4,720 cartridges).

Cartridges are priced separately at $20 each.

Two units may be attached to one CPU to provide up to 472 billion bytes (9,440 cartridges) or the equivalent of 4,720 disk packs.

The 3850 system consists of a 3851 mass storage facility, which is the cartridge handling and storage box; a new 3330 controller; the 3830 Model 3 to serve as the master control and buffer between the CPU, disk packs and 3851; and a 3330 disk subsystem.

Up to 32 disk drives may be attached to the 3830 Model 3 controller and up to 16 of these may be designated virtual, or staging, drives, to which data from the mass storage facility's cartridges can be transferred. The 3830 creates virtual storage space on these 16 drives by allocating multiple addresses to the group of staging drives, IBM explained.

The storage control can address information to as many as 64 units regardless of how many real disk drives are attached, IBM said. "Thus if the maximum of 32 drives is attached, the 3830 can manage them as though disk capacity had doubled," a spokesman added.

After being unloaded onto disk, the cartridges still retain the original information when returned to storage.

IBM claims the mechanical time to fetch or replace a cartridge ranges from three to eight sec each; loading and unloading the cartridge onto and off the read mechanism takes a total of 10 sec. The data is transferred at 874 kbyte/sec, the company said.

OS/VS Expanding

The 3850 operates with 370/145 through 168s running under OS/VS1 or 2. A new part of OS/VS called the Mass Storage System Communicator issues the appropriate commands to the mass storage control.

Options will be added to the Virtual Storage Access Method (Vsam), which are said to give the user a selection of different staging and destaging procedures.

Access to information in the 3851 is controlled through existing password protection programming of OS/VS. Users may also place locks on access panels to protect information, and the system can be equipped with special features to detect the presence of foreign magnetic devices or to detect fire or fumes and self-activate a fire extinguishing system. The system can be located up to 200 feet from the CPU.

First customer shipments of the 3850 mass storage system as well as staging adapter feature for the Models 158 and 168 are scheduled to begin in the third quarter of 1975. Field conversions of existing control units are also scheduled to begin in the third quarter of 1975.

The 3851 is available under the Extended Term Plan (ETP), which provides for a two-year contract period, for monthly rentals ranging from $10,600 for a minimum-capacity model to $51,200 for a 472 billion-byte configuration with two mass storage facilities.

The two in. by four in. IBM data cartridge contains approximately 770 in. of magnetic tape where information is stored in the format of IBM's 3336 disk packs.

Rentals under the Monthly Availability Charge (MAC) range from $12,455/mo to $60,360/mo. Purchase prices range from $477,000 to $2.3 million.

The 3830 Model 3 storage control is available under IBM's Fixed Term Plan for a one-year contract period with a monthly rental of $3,901. ETP rental for the Model 3 is $3,562/mo. Under MAC rental is $4,240/mo. Purchase price is $160,000.

KL10-Based Upgrades Provided in Stages

(Continued from Page 1)

The Decsystem-10 upgrades will have some compatibility with non-DEC systems. There will be standard interfaces for IBM bisynchronous and Control Data Corp. protocols and the Decsystem-10 can be made to look like an IBM 2780 system for IBM compatibility to a host CPU. In some cases it will be possible to develop programs on the Decsystem-10 and then run them on non-DEC CPUs.

The KL10 CPU has power "in excess of the 370/158 for scientific environments and is about equal to the 158 for business job mixes," a spokesman said. The PDP-11/40 included in the KL10 will be used by DEC maintenance personnel to perform on-line diagnostic tests from regional field service test centers.

Although the 1080 and 1090 are described as time-sharing systems, DEC has emphasized there are many features which lend themselves to batch-type jobs. A typical user was described as having a mix of both types of jobs.

The systems have writable microcode and no read-only memories are used, although it was not the intention that users should change the microcode. But the possibility exists that the more innovative users will want to alter their microcode, a spokesman said.

The announced prices are said to be 6% less than other Decsystem-10s for smaller configurations, with a 25% to 30% reduction for larger systems, while at the same time providing more processing power.

The cache memory has an access time of 125 nsec, and during a typical operation data being written to or read from memory is already in the cache "90% to 95% of the time." The cache does not require write through to memory. This eliminates the necessity of writing back into main memory each value of an index in a loop comprised of only a few instructions, DEC said.

Among the offerings planned for later Decsystem-10 upgrades is a dual processor such as DEC now has with dual KI10 CPUs in the 1077 system. But no firm date for such a configuration has been set, a spokesman said.

Why your time-sharing bill doesn't make sense.

You get your time-sharing bill.
It's a lot higher than last month.
And you can't quite figure out why.
So you ask your time-sharing salesman to explain.
He can't.
You can understand their connect charge alright. $10 to $15 per hour. Plain and simple. Fine.
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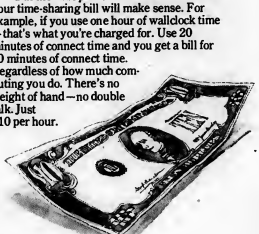

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Draws 3-D Terrain Maps

Plotter Helps Stake Out Hilly Homesites

From a hilltop vantage point, representatives of Raymond Vail and Associates compare the actual topography of this Sierra resort development with a computer-drawn, 3-D map of the terrain.

SACRAMENTO, Calif. – High in the California Sierra mountains, homesites are being staked out with the aid of a computer-driven plotter.

Using an IBM 1130 computer and California Computer Products (Calcomp) plotter, civil engineers at Robert Vail and Associates make three-dimensional terrain maps of a building site as seen from a variety of angles.

This helps them design homesites that both harmonize with the surroundings and comply with environmental protection regulations, according to Stan Potoski, an engineering designer who manages the firm's DP department.

"We design the lots and access roads to fit the curves and contours of the land," Potoski explained. The terrain maps aid this process by presenting the bare terrain, with no trees or other foliage obstructing the engineer's view.

Developing such maps by hand would be prohibitively expensive, noted Wayne Hubbard, a forester with the group.

The process begins with surveyors measuring the landscape and airplanes photographing it from above. Their joint data then goes to skilled photogrammetrists who produce stereo images of the site.

Then a person at a stereo plotter interprets and digitizes the stereo photographic images. That data enters the IBM 1130, which drives the plotter to draw terrain maps from any vantage point the engineers request.

Other plotting programs can superimpose circles representing trees on top of a terrain map and can draw lot lines and roads, Hubbard said.

The company uses the system to draw both its parcel maps and preliminary plans showing roads and parking lots.

Besides the help they offer engineers, the varied maps the plotter can produce have a public relations value as well.

"It's very important for us to get the approval of the local community" as well as the planning board, Hubbard observed.

The maps help in answering questions from local residents about how the development will affect the environment.

Good News: You Can Still Get Bawled Out in the Army

WASHINGTON, D.C. – The U.S. Army's oldest and best known piece of paper – the Morning Report – was recently replaced by a computer.

Manually recorded for 199 years by company clerks to know who's where and doing what, the Army's Form 1 was supersedby the Standard Installation-Division Personnel System (Sidpers), which will expedite the massive job of keeping daily track of GIs, the Army said.

But all tradition is not lost. Clerks will still be needed to fill out changes in personnel information and if one goofs he'll face the company commander as usual – and an unsympathetic computer.

EXECUPORT 1200: The fast, wide-track one

The new Execuport® 1200 prints a fast 120 cps (but select 10, 15, 30, or 60 cps if you wish). It prints this entire advertisement in under 29 seconds . . . on a line up to 132 characters wide.

It's an asynchronous serial impact printing terminal, compatible with most teletypewriters, computer systems, and cassette magnetic tape units. There's a modem controller for high-speed conversational timesharing; a Bell-compatible 202 modem is available.

The Execuport 1200 makes an original and five sharp copies on standard fan-fold paper. Yet it's quiet enough for an office.

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'IBM Said It Couldn't Be Done'

Sparks Has Small System Doing More Than It Should

By Edith Holmes
Of the CW Staff

SPARKS, Nev. – Installed a year ago to execute budget operations, a small computer system here has become the city's jack-of-all-trades and, in the process, mastered a number of applications.

In addition to its original budget task, the IBM System/3 Model 10 performs a variety of applications including the preventive maintenance of city vehicles, the city payroll and the billing of quarterly sewer assessments, according to Dave Dahlke of the city's DP department.

With the exception of one IBM-supplied police reporting system, "we've written the software for all these applications," Dahlke said.

Sparks' DP department is in the process of converting the law enforcement program to disk because IBM offers this application only on cards, he added.

Problems

Implementation of the System/3 did give the city its share of problems, Dahlke said.

"We've had both disk drive and printer problems, and we continually find tricks IBM said the system couldn't do that it can, and vice versa."

For example, Dahlke said IBM told the city the system would have no problem with multivolume files. "But the system has trouble accepting additional files," he commented.

IBM is currently researching this problem, according to Dahlke. "On the whole, we've had good vendor support and have no complaints with IBM," he added.

"Despite its growing population, Sparks is in the middle of nowhere, so we need a vendor with a manufacturing office within hailing distance," Dahlke said. "As long as our choice of manufacturer is among IBM, Burroughs and NCR, we'll choose IBM because of their system support capability."

Dahlke anticipates the city will soon build a property data base into the system to provide a profile of every parcel of land within Sparks' jurisdiction. Containing such information as building codes, easements and right-of-ways, tax assessments and access to fire hydrants, the property system and its use by some 15 different agencies will require an equipment upgrade, he commented.

"We might go to an upgraded System/3 with larger disks and additional terminals," he remarked. "A full-blown Model 10 would do the job, but this would be a five-year project for the city."

Dahlke listed some 12 jobs the city of 30,000 relies on the present computer to perform but noted the budget application remains the system's biggest single task.

At the center of this application is the weekly budget report, which includes such features as automatic capital equipment depreciation, information on how city departments spend their funds and payroll checks indicating how much of each employee's salary is funded by the city, he explained.

These features enable city officials to set aside funds to replace equipment as it wears out, to reclaim excess funds budgeted to departments to meet quarterly payments and to determine when a major raise will mean less disruption of city finances because federal funds make up a portion of an employee's wages, he said.

Privacy Bill Drafted By Va. Lawmakers

By e CW Staff Writer

RICHMOND, Va. – Spurred by public pressure for privacy legislation, state lawmakers here are drafting a bill to set standards for and safeguard privacy. The bill will be introduced at the legislature's next session.

To date, the Virginia Advisory Legislative Council Computer Privacy Committee, a between sessions bi-cameral committee chaired by State Sen. Joseph V. Gartlan Jr. (D-Fairfax), has held public hearings in both Richmond and Norfolk, surveyed all state agencies that collect personal information and maintain automated systems, and heard testimony from the public as well as organizations whose incomes could be directly affected by such legislation.

The committee is getting pointers from legislation passed in the states of Minnesota and Massachusetts, legislation now pending in both houses of the Congress and the Department of Health, Education and Welfare's privacy recommendations. The group hopes to develop a bill that would cover both the public and private sector, much like the Koch-Goldwater bill now before the House of Representatives, Gartlan said.

Gartlan said he personally favors a bill that would define fair information practices, provide guidelines for effective data security and place restrictions on any new information gathering by state agencies.

As for old records, Gartlan said, the question of "how retroactive" to be in their approach still is not resolved.

Gartlan suggested placing enforcement authority in an elected person or body – perhaps in an expanded Office of Consumer Affairs – and he said legislation should cover both automated and manual systems.

The five principles guiding the committee are:

- The existence of all data record systems must be disclosed.
- An individual must have access to personal information and know how the information is used.
- Information collected for one purpose cannot be used for another without that individual's permission.
- An individual must have access to the file to correct or amend its contents.
- Reliability of information must be assured by the data bank organization.

System Aids College Hunt

NEW YORK – An experimental computer program is helping high school students here plan their college and occupational careers.

Funded by First National City Bank, the program, called Computer-Assistance Guidance, enables students to obtain information within seconds that might ordinarily take hours or days to get by studying college catalogues.

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TASK/MASTER can be generated and operational in hours. Simplified specification of the operating system to be used, programming languages, terminal support required, and system options insures a smooth and easy initial installation. Expert TSI personnel train your staff on-site and guarantee a rapid successful system implementation.

In a recent DATAPRO survey of ninety telecommunication monitor users (report 70E-010-40a), TASK/MASTER ranked ahead of CICS, ENVIRON/I, and INTERCOMM in ease of installation.

ease of application programming

TASK/MASTER allows direct and simple interfaces from COBOL, PL/I, FORTRAN, and Assembler programs. Application programmers can be trained to write efficient on-line programs *in hours*. Any level of IBM compiler can be used, without modification. Unlike CICS, no preprocessing of high level language programs is required, further simplifying program creation, testing, and maintenance.

Not unexpectedly, in a recent user survey nearly two times as many INTERCOMM users and three times as many CICS users felt their system restricted the application programmer as did TASK/MASTER users.

resource utilization

TASK/MASTER's basic architecture and technical facilities allow significant resource savings. Survey after survey and installation after installation have shown that TASK/MASTER can be generated to run in 10%-50% less storage (including real storage required in a virtual environment) for any specific user requirement than can any competitive approach.

TASK/MASTER also saves on other system resources, including CPU overhead, disk space, and master terminal costs.

features

TASK/MASTER provides features totally unmatched in any competitive package. Among these are:

- a complete message queuing mechanism, including automatic disk overflow, stations by station control, queue protection, and duplicate message suppression in the event of system failure and restart
- true terminal independence which makes device control characteristics transparent to application programs and is far more powerful and easier to use than any other message mapping facility
- file protection allowing automatic recreation of databases after system or file loss
- a *generalized* interface to any database management system, including TOTAL, DL/I, ADABAS, DBOMP, IDMS, and others
- automatic application restart in the event of a system failure *without* duplicate file updating due to message reprocessing
- terminal support which covers the widest choice of IBM and non-IBM devices in the industry

vendor support

TSI's support for TASK/MASTER users is the best in the industry. Once again using the DATAPRO survey as a reference, monitor users rank our support for TASK/MASTER well ahead of CICS, INTERCOMM, and ENVIRON/I.

In an independent user study approximately 85% of TASK/MASTER users felt the technical support provided with the package was good, versus less than 65% of INTERCOMM users and only half the CICS users. Why? Possibly because of the four vendors involved, we are committed *exclusively* to excellence in on-line systems and have built a Customer Service organization committed to that single goal.

cost

Although the other advantages on this page translate into cost savings many times the price of the monitor itself, TASK/MASTER is also the lowest cost package on an out-of-pocket basis. TASK/MASTER's low price includes all installation support and education services.

performance

Whatevar your environment – DOS, DOS/VS, OS, or OS/VS – TASK/MASTER will perform better than any alternative you could choose. Respondents to DATAPRO's survey once again ranked TASK/MASTER first in performance.

Other surveys have consistently placed TASK/MASTER at the head of the field in overall system performance considerations. In a VS environment, TASK/MASTER has nearly two years of demonstrated capabilities running in a fully virtual mode, an unmatched record with equally unmatched results in scores of VS shops.

user satisfaction

In the final analysis the overall satisfaction of existing users is possibly the most critical factor in selecting a monitor. In survey after survey TASK/MASTER users have expressed the highest level of satisfaction with their system. DATAPRO's results were once again typical: when compared against the other monitors on the basis of overall satisfaction TASK/MASTER came out ahead of the field by a significant margin.

In 150 installations around the world, TASK/MASTER is establishing new standards for simplicity of use, reliability, performance, and user acceptance. Any or all of these users are our best advertisement.

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Kansas City	10/31	Detroit	11/14	Toronto	12/11
Seattle	11/6	Chicago	11/20	Philadelphia	12/12
New York	11/7	Memphis	11/20	Chicago	12/12
San Francisco	11/8	Cincinnati	11/21	St. Louis	12/18
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Remote T/S Helps Train GM Car Dealers

By Edith Holmes
Of the CW Staff

FLINT, Mich. – As part of its personnel development effort, General Motors Corp. (GM) conducts dealership management training for several of its divisions through the use of remote computer services.

A one-and-a-half day seminar, the GM program puts six dealership management teams in an area through the operation of a computer-simulated retail dealership, according to Richard E. Nelson, assistant manager-sales and marketing, management and organization development, at the General Motors Institute (GMI) here.

Between lectures on management methods, each team follows its own management position to compile monthly operating forecasts for ficticious dealerships. Predictions are then entered for processing to General Electric's Mark III network through two portable terminals. Each team receives its financial results within an hour and a half.

Previously, dealership management went to GMI for this kind of training, Nelson said. But this approach meant only dealer principals attended courses because most dealerships could not spare their entire management for a week in Flint.

"We had to go to the dealers, and we had to have the capability of accessing our simulation model in hundreds of cities throughout the country," Nelson explained.

Anderson-Jacobson terminals printing 30 char./sec can be taken to any seminar site and linked into the system, he noted. To access the simulation program stored in the Mark III system, the GMI team simply dials the local General Electric Information Services telephone number.

Nelson said seminars can be held at any one of GM's 30 training centers located throughout the country or wherever six managements request that the seminar be conducted.

During the course, each team, consisting of the dealer principal and/or general manager, the new car sales manager, the used car sales manager, the service manager, the parts and accessories manager and the business manager, runs the dealership for a simulated six-month period, Nelson explained. While the first four months of operation are completed during the seminar, the remaining two months are finished by each team back in their own dealerships.

"Computer simulation provides us with a competitive management game that sparks involvement and participation," he remarked. "Teams show up at 7:30 in the morning to start forecasting the next month."

While the teams themselves don't actually operate the terminals, Nelson contended the use of the simulation model gives GMI "a very pragmatic game and application-oriented approach to teaching."

He suggested the completion of the course by each group in its own setting requires dealership managements to learn to work as teams. "By continuing to work as a 'team' after the seminar is completed, they are better equipped to operate their own dealership more efficiently and more profitably," Nelson said.

GM went to General Electric Information Services in May 1973 to develop the remote computer services capability. Between October 1972 and that time, GMI used the GM Parts Division time-sharing system.

"We pay more by going out-of-house," Nelson remarked, "but this method saves the dealerships money and time."

Begun with Pontiac, dealership management training via remote computer now extends to other divisions like Oldsmobile and Chevrolet and to some dealerships in GM of Canada on a limited involvement/experimental basis, he said.

Canada Provides Data On Water Resources

OTTAWA, Ont. – The Inland Waters Directorate of Environment Canada is making it easier for the general public to get water resources information from its computer data bank through a 120-page guide which provides information about nine different data collection, storage and retrieval systems.

Data is available, for instance, on a hydrologic square grid system which can be used to find out what geographic, meteorologic and hydrologic information is available for a certain area.

Streamflow and water levels for this hydrometric system are obtained from more than 2,400 water gauging stations. Such material is essential to forecast levels and flows as specific points on rivers and lakes.

Other data systems include the Groundwater Observation Well Network (Gown) containing information on well construction, instrumentation, groundwater reserves and geologic data on groundwater aquifiers.

All available information on Canadian glaciers is stored in the Glaciology System in which more than 23,000 glaciers and icefields are measured and mapped.

Ship surveys have provided the bulk of the data on the Great Lakes in the Star/Eros system. Most of the data is on water quality, amounts and types of pollutants detected in the lakes since 1966.

The total Canadian water quality picture is based on findings of federal sampling stations; this data is stored in the National Water Quality Data Bank.

Other data banks include Waterstat, a system containing administrative, technical and economic resource statistics, and Watdoc, which covers a wide range of published and unpublished documents on all aspects of research, planning and management of Canadian water resources.

Government officials said if users of the data systems aren't quite sure where to start looking, the guide contains an index showing all variables measured and what systems have information on them.

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Through 'Computer on Wheels' Program

Mini Rolls Into Hands of Maine Students

By Edith Holmes
Of the CW Staff

PORTLAND, Maine – A traveling mini-computer will give students in five area high schools a chance to get "hands-on" experience in computer problem-solving this year.

The "Computer on Wheels" program also may work to win teachers over to using the machine in their classrooms, said Lincoln T. Fish, the program's author and chairman of the mathematics department at the University of Maine at Portland-Gorham (UMPG).

Based on a Digital Equipment Corp. (DEC) PDP-8/F, the program depends on the movement of the mini from school to school. A driver-teacher carries the 40-pound computer in a station wagon and provides a backup for teachers who can ask him for assistance with course materials, Fish explained.

Each school has a teletypewriter for full-time use, and students punch problems and programs onto tape throughout the week.

On the day the mini comes to the school, the teletypewriter is linked to the computer and prints out solutions to the week's backlog of problems, Fish said. Two teletypewriters travel with the computer to permit additional student interaction with the CPU while the tapes are being processed.

The five schools involved in the program include Cape Elizabeth, Gorham, Scarborough, Bonny Eagle and Sacopee Valley.

Teachers from these and other Maine high schools attended a three-week training course at UMPG this summer in preparation for the program, Fish said.

"Not only do teachers need to know how to explain computer operation, they need to understand how the equipment can best be utilized in problem-solving," he said.

During the school year, administrators and participating teachers will have full responsibility for employing the computer effectively, according to Fish.

Federally funded, the program has been allocated monies under Title III of the Elementary and Secondary Education Act. Working with a total budget of $37,000, Fish said some $19,000 has gone into equipment. And, Computer on Wheels accepted DEC's offer of $10,000 worth of tape equipment on a free-loan basis, he added.

Set up for three years, the program will initially emphasize computer applications in the mathematics department.

Science departments, including physics, chemistry and biology, will benefit the second year, and during the final period business or commercial department applications will be stressed, Fish said.

"Applications in mathematics tend to be more direct than those for science and business," he explained. "And we've had no success in introducing computers to high schools through business departments; they're too used to using big IBM computers and aren't particularly interested in what a mini can do."

He hopes to influence the attitudes of business teachers by making computers a successful venture in mathematics classrooms.

No plans have been made as yet to use the portable equipment after the completion of the three-year program. Fish assumed the machinery would become the property of the Title III unit in the state's Department of Educational and Cultural Services.

But, Fish suggested, the project could be repeated in other parts of Maine or the computer could be loaned to school systems a year at a time.

But Don't RSVP...

HUNTINGTON BEACH, Calif. – Four thousand families were accidentally invited to participate in a year-long preschool program in the Ocean View School District here.

The letters, intended for families in the Ocean View School District only, were sent instead to 4,000 families who didn't even live in the district when a boundary transparency slipped as a street map was being fed into a computer.

"The district regrets the error," said Gayle Wayne, spokesperson for the school district.

Of 6,000 letters mailed, 2,000 reached the right families, Wayne said. She added that the district would do another mailing to notify the correct families.

The district has been flooded with enthusiastic telephone calls from parents whose children are, unfortunately, ineligible for the program.

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HARRIS
COMMUNICATIONS AND INFORMATION HANDLING

Editorial

A Low Blow

Inflation is definitely with us and price hikes are logical on computer equipment because of the increased cost of doing business.

But the recently announced price increases for computer systems from mainframe vendors are somewhat of a low blow to users around the country with installed equipment.

No one doubts the cost of producing present computer systems has risen and that this cost can legitimately ba passed along to users of those systems.

However, the cost of producing systems only affects the ones being made today – not ones that were produced last year and the year before and the year before that.

For example, let's look at the recent IBM price increases [CW, Sept. 25].

Not only will new users have to pay a higher monthly rental cost, but all users of the affected equipment will have to pay a higher price, even though the equipment they are using was produced for less cost.

Undoubtedly the users of equipment produced two and three years ago should pay the slightly higher price attributable to the increase in maintenance charges, but that increase is only a small part of their rental charge and should not be the same as the rental increase on new equipment.

For example, a piece of equipment that cost $1,000 to build in 1972 may well cost $1,200 to build today. If it was rented for $20 a month then, it should stay at that rate, even if the new unit will be rented at $24 per month.

But that is not what IBM and the other manufacturers have done – they have increased the rental on both the older and the newer equipment, giving themselves an extra profit margin on all equipment presently in the field.

They will now recover a higher rate of return for equipment that was less costly for them to manufacture than they will for the newer equipment that costs more to produce.

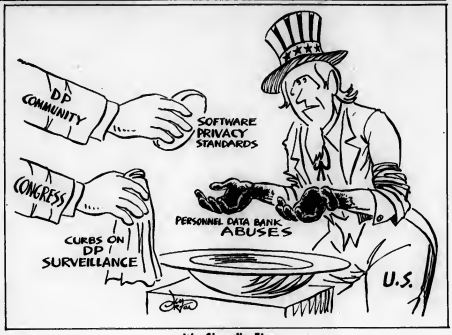
And who's holding the bag? You guessed it – the user.

There is a solution, of course. IBM as the leader in the field could notify all users with equipment presently installed that their rentals will not go up except for an increase in the cost of maintenance.

At the same time, it could announce that all new equipment produced in these more inflationary times will cost more.

The solution is fair and equitable even if it might cause a slight bookkeeping problem, which IBM could easily handle. And if IBM takes the lead, it is likely other mainframe makers will follow.

Unfortunately, this solution appears unlikely since IBM seems more interested in windfall profits from equipment that was produced at a lower cost than it does in being fair with its faithful and oft-misused user base.



It's Clean-Up Time

Letters to the Editor

In a World of Mixed Vendors, Who Should Pay for Downtime?

I found Alan Taylor's column, "The Availability Problem: Who Pays for Downtime?" [CW, Sept. 18] most interesting.

Of special significance to me was the consideration that if a peripheral is down, in reality the total system could be valueless to the user and he might therefore be entitled to claim a credit for 100% of the rental value of the entire system.

In today's world of mixed vendors, who would be responsible for this credit if it were, for example, a plug-compatible disk which was down?

Would the customer seek compensation from the mainframe vendor? Or would he seek it from the plug-compatible firm?

In a large IBM 370/168 installation the rental price of the disks probably would be less than 10% of the total rental. Might the user expect to be able to collect 10 times the rental value of his disks from a plug-compatible firm? Or should he expect IBM to lose the rental of the 168 because a "foreign" disk was down?

The problem becomes more complex when we consider a communications-oriented system. An on-line system goes down because "noise" is entered. Whose fault is it? Is the terminal faulty, is the modem the culprit or is it the telephone line?

While we are sorting this out, who pays for the downtime of the mainframe system?

Any thoughts on these aspects would be very much appreciated.

R.W. Vlastnik

Stockholm, Sweden

'Layla' Name Suggests More Than Just the Title of a Song

I was very interested in Peter E. Katsoulas' reply to Julie D. Wilson's objection to ECI Software Corp.'s Layla advertising campaign [CW, Sept. 11].

I was particularly intrigued by his statement that "a great deal of thought went into the creation of our cartoon character so that sexual exploitation would not be a factor." If that character does not represent sexual exploitation, the cartoons that were rejected must have traveled through the mail in plain brown wrappers.

I have never heard of the song entitled "Layla" and did not immediately see the connection between that name and the song from "Damn Yankees." I did, however, see the connection between the seductive pose and decolletage of the cartoon character and the word "lay" in ECI's resource scheduling system's name.

And isn't it interesting ECI considers it appropriate for a resource scheduling system to be named after the type of woman who traditionally has a need to schedule her resources?

I was equally surprised by Katsoulas' contention that "women have always held respectable, equal, well-compensated positions side-by-side with men" in the data processing industry, or anywhere else. After nine years in the same industry, I have yet to see any such thing.

In fact, it has been my experience that those of us who choose to have a career must work harder, perform better and generally make an effort that is superior and more visible than our male colleagues, only to be rewarded on a much smaller scale.

If Wilson's objections to ECI's ad campaign were the only one received, then it is because some of us have bigger fights to fight and consider this brand of advertising beneath contempt and comment. After all, it is very common, particularly in the fledgling DP industry, to find outdated advertising campaigns resorted to and innovative and enlightened campaigns bypassed.

There is no possibility that a misinterpretation of the intent of ECI's ads will occur. Obviously it intends to sell as many scheduling systems as it can, and there is no better way to do so than to attract the attention of those with decision-making and purchasing powers within a company, those persons who will be attracted by the double entendres and generally salacious quality of ECI's ad, i.e., the men in management.

If ECI didn't believe that, it wouldn't run that ad.

Paula L. Berg
Coordinator
Autoflow II System Support
Applied Data Research, Inc.
Princeton, N.J.

Peer Recognition Not a Goal

Congratulations for printing Burton Grossman's viewpoint article, "DP Heading Toward Mediocrity in Sophisticated Way" [CW, Sept. 25]. It is time we realize the true test for professionalism is the ability to perform to the satisfaction of our employers or customers.

As a tool, albeit a powerful one, the computer must be used for one purpose only: to improve an organization's ability to meet its objectives.

These objectives do not include, I am sure, the selfish interest of those who sustain the computer no matter how important they are to its vitality. Neither do the objectives include the need to employ the latest version of any vendor's hardware or software.

And this may come as a surprise to many, but most company objectives also do not include the desire to provide on-the-job training merely to have their employees gain peer recognition. They do, however, appreciate a job that is done professionally – and who should expect less?

E.L. Kurowski

Chicago, Ill.

(Other letters and viewpoints on Pages 11 and 12.)

DPers Can Spread Around A Bit More Consideration

By Ron Mitchell
Special to Computerworld

Does a computer have feelings? Does it have emotions? Should we be concerned about shouting and screaming obscenities at it? I say yes!

I believe we are much too inclined to blame the computer for our own human errors. Typically, it is done with malice and without any consideration for the computer or the data processor.

Viewpoint

Picture this: You, as a data processor, are upset about the quality of input coming from one of your users. You approach the user with, "What in the (expletive deleted) are you people trying to do? That new data input clerk is really screwing up the works. That (expletive delted) must be completely ignorant of his/her job. Can't he/she do anything right?"

I am confident there are not many professional data processors who would approach a problem in the above manner; however, I am convinced there are a great many users who *do* approach problems in the above manner when they think the computer is to blame.

Perhaps even more disturbing than the lack of consideration given to the computer is the lack of consideration implied to the data processor. We as data processors have just as much pride in our (expletive deleted) machines as the users do in their (expletive deleted) clerks.

I suppose the whole problem of computer consideration lies in poor communication between the data processor and the user. A one-way street of communication will inevitably lead to problems. A two-way street is necessary, but a four-lane superhighway of communication is even better and will yield the least problem activity. Even in times of heavy traffic, road hazards and bad weather, courtesy and consideration are musts for good communications.

If we don't control the lack of computer consideration, what could be the result?

Think about it and ask yourself what consideration you would expect the next time you have a problem with that inhuman (expletive deleted) machine back in data processing.

Mitchell is computer coordinator at State Farm Mutual Automobile Insurance Co. in Winter Haven, Fla.

Out of Poverty, Riches

As many readers of this column will remember ["Four-Stripe Frankenstein," CW, April 17], I'm pretty negative on the more highly romanticized aspects of the mini revolution. Aunt Grace's thesis that a network of minis is more powerful than a clump of ditto, and that the latter is more powerful in turn than a standard 370 or 1100 costing the same, is thermodynamically unsound. In a workaday data processing environment, that is; for university instruction (read, "playing games"), economics goes out the window.

There is, however, one profoundly encouraging thing about minicomputers and microprocessors: because of the limited support the manufacturers could originally offer, and because of the amazing diversity of user applications – especially in dedicated mode – most programming was done in machine language or with the help of very primitive assemblers and debugging aids.

The programmers had to get along without Fortran or Cobol, without an operating system, without foolishness like virtual memory. The result was, and is, remarkably efficient and fast-running applications software. It was the efficiency of the latter, contrasted with the murky, OS/VS/PL1-encumbered software written by 370 victims, that has led many observers to declare, again, that Grosch's Law is obsolete.

Would, oh, would that it were! On the favorable side, of course. No one would be more pleased than I. But there are clouds, considerably larger than a man's hand, on the horizon. The suppliers are getting rich; DEC is already very big and very prosperous, and others are in train. So what happens? Word size goes up, to 32 bits in some cases. With big production runs, memory cost comes down and memory sizes increase. Urged on by the xxxxx-envy (ah, there, conservatives – I didn't say it!) of their systems programming manufacturers now offer Fortran and Cobol, and threaten their innocent customers with operating systems. Nonstandard, of course!

Doesn't have to happen, people! We can go on using the new machines the way we do now. *And* we can use the 370s and the Univacs and Honeywells the same way: we can learn how to operate big machines efficiently by watching the mini users. The greatest benefit of the whole game could be not the intrinsic value of built-in minicomputers and one-chip microwonders, but the way that they demonstrate to bemused data processing managers how much work they *should* be getting out of their big machines. It isn't the sophisticated peripherals that are slowing the major installations down; it's the layers and layers of unnecessary systems software!

The mini girls and boys have shown the old-timers what can be done. Now, let's do it!

Herb Grosch

Why Don't We Admit That Computers Don't Read?

A typical way of describing part of a DP application is to say: "The computer reads some data, then processes it."

Now, we all know computers don't read the way humans do (and reading is a peculiarly human attribute). Computers don't have eyes, nor do they join lending libraries, so it is understood that computer reading is different from human reading.

What we easily forget, however, is that computer reading is unlike human reading in two essential characteristics: humans retain access to what is being read until after mental processing has commenced, and humans at least verify that the item being read is understood in context.

The Taylor Report
By
Alan Taylor, CDP

In short, the computer concept of reading and, later, processing when the data read is no longer accessible, is functionally not equivalent to the human reading operation.

Similarly, the typical way of describing an application is explaining that, after the computer has read and processed data, it creates a record. Again, everyone knows computer records are different from the normal human record.

A human record consists of a specific piece of paper with writing and, generally, a signature and date. Only one original of the record can ever exist. Copies can be made to a greater or lesser degree of accuracy, but these need validation for each copying of the item.

The copies, moreover, never become the record itself. If the original record is destroyed, then we say: "A copy of the record exists." We don't pretend that we still possess the original item.

But computers do.

The so-called computer record is not an original at all. It isn't even a verified copy of an original set of input; it's something that has been through goodness-only-knows-how-many processings and updatings by programs which normally don't even really define themselves as being anything definite.

The computer record – altered, copied and unverified – is the very antithesis of the concept of "recording," the idea of making and keeping an original, contemporary writing which can be referred to with absolute confidence in the future.

The two record concepts, like the two versions of reading, are diametrically opposite!

No Vocabulary Shortage

This difference between the human version and the computer jargon version of these common terms does not occur because of the paucity of the English vocabulary, either. English is one of the richest languages in the world, and there are words which can handle the concepts used in computer reading and record maintenance without using terms which are diametrically opposed to the facts behind the situation.

Computer reading, for instance, involves taking one or two quick glances at an input item's representation and storing the results for an indefinite time before trying to interpret them. If we keep to the original ocular analogy, we can find the words *glance* and *sight* able to describe this action correctly.

If we are prepared to go further into the language to find effective terms, we might select *scan* as having something more of an automatic connotation.

Any one of these terms is available to us instead of reading, but we don't use them.

Similarly, the copying and recopying process of computer records can be distinguished by words like *cycle* or *scratch pad* or even partly by means of the word *copy*. All of these words attest to the basic weakness and danger of the approach used in DP and highlight the difference between what DP seems to be doing and what is actually happening.

Valid for What?

Even in actual processing we come up against some of the same types of misleading nomenclature. My pet peeve is calling data cleaning routines "validation routines" although they are nothing of the sort.

Validation of some input is practically impossible in most computer applications anyhow. Real validation would minimally involve receiving, from a completely independent source, some other copy of the information, like receiving a list of hours worked both from the personnel department and from the union's shop steward.

If the two items are identical, it would constitute a possible form of validation, since both the personnel department and the shop steward are unlikely to make the same mistake. But I have very rarely seen anything approaching this form of validation used as input to "validation" routines.

What does happen in the validation routines is that a few validations that can mess up the program are checked. Not, be it noted, out of any interest in receiving correct data, but just to see the data doesn't cause a dart check somewhere later in the program. Not for the accuracy of the printout, but just for the convenience of the computer program operation.

Yet, despite this, flowcharts in use throughout the country mark the output of these routines as validated data. And managers, accountants, auditors and many others who know English better than they know the nuances of automated DP feel reassured that the only precautions needed to protect the operation are those necessary in a manual system.

In the manual system, however, data can be read by humans; records do consist of original, contemporary entries, and no one would dream of calling a figure to be used in a payroll application valid simply because it didn't contain letters where numbers should be.

This omission of precautions is the great danger of this total misuse of words DPers have inflicted upon business management. By using words implying we really duplicate human-maintained systems, we assure management that no special precautions are needed because of the system being a nonhuman, automated one.

Then, having put management's fears to sleep, we are inclined to blame management's failure to demand expensive and time-consuming precautions as being the root cause of computer failures – or, in the famous phrase repeated at computer conference after computer conference, as being "an abdication of management's responsibility."

Nonsense. There has been no abdication by management. There *has* been a usurpation of management's position under the cover of our blatent misuse of the English language, and I'd like to hear any argument that says we don't abuse the language.

If we are really interested in getting reliable systems (and from my standpoint I am by no means certain that the majority of systems analysts and programmers are really interested in much more than receiving a continuous stream of paychecks), then we should drop the use of misleading words such as read, record and validate.

If that is too extreme, then along with each proposal or application description should go a formal document explaining in straight, accurate, down-to-earth English both what computers don't do and just what management needs to avoid the new problems computers can bring into application.

With, of course, a budget for doing it.

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Letters to the Editor

Computers, Like Cars, Require Expert Care

In his viewpoint article in the Sept. 11 issue of *Computerworld*, W. Grafais presented a somewhat interesting concept. He said absorption of programmers and other functions in the data processing profession occurs when knowledge of DP becomes general to the area it serves.

I can help but think there is a certain analogy between the computing industry and the automobile industry. Though many will react indignantly to the suggestion of comparison with a trade, nevertheless it does exist.

While first in the hands of a very few, the automobile eventually became available to a majority of people and is now an integral part of our lifestyle. To keep an efficient and well tuned automobile today requires expert training in electrical, air conditioning and pollution control systems, to name just a few areas. This includes classroom training with almost every new model that is introduced, as well as keeping up-to-date on the latest service bulletins on solutions to common problems.

There are all kinds of mechanics ranging from good to bad to mediocre, with a certain element clamoring for certification of all mechanics. It is a fact that you can go to a gas station or a trained technician, or you can do it on yourself. But although everyone has access to the information on how to repair an automobile, there is still a need for trained technical expertise.

An automobile, whether made by Ford, Chrysler or General Motors, has certain basic and common characteristics. Likewise computers, whether IBM, Honeywell or Burroughs, also have certain basic similarities. Because the state of the art does not exist in a vacuum it compels the DP technician to keep himself as well informed as possible, and his employer to keep him as well trained as possible.

No matter how common DP knowledge becomes there is still need for expert trained personnel. The automobile has gone through many changes and yet the mechanic has not become obsolete.

In reality, as the component parts and technology have advanced to the point of removing the support out of the hands of the user, the need for trained technical expertise becomes even more obvious.

Donald G. Charity

Fair Lawn, N.J.

Truth or Decision Tables?

J. Dennis Omlor's article on nested IFs [CW, Sept. 4] immediately caught my eye.

Omlor attempted to express "structured" Cobol computer code in an analytical form. I wonder if Omlor is aware of the particular intersection of techniques in which he has, seemingly inadvertently, found himself?

If you take his truth tables, rotate them 90° and look into a mirror, what do you see? Decision tables!

Decision tables, the original "structured" programming tool, may ring of the early days of the '60s for some, but there is a lot of activity in this field today. In this regard, Omlor hit on one of today's hottest topics: conversion of computer programs to decision tables.

When he noticed how his tables "collapsed" and how "some of these things can be done in other ways," he has even wandered into the lofty topic of table decomposition.

Possibly he has noticed that by writing his binary matrix table it became a simple matter to detect whether logical gaps existed in his code, or he might even have shown up a case or two where logical contradictions existed. For these are the things that decision tables are all about.

W.J. Harrison

San Francisco, Calif.

'Leap' Details in Error

Those of us involved in the Leap effort in Missouri appreciate the exposure in *Computerworld* [CW, Sept. 18]. However, there were several erroneous statements we wish to correct.

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John W. Fox
Executive Secretary
Loaned Executives Action Program
Jefferson City, Mo.

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CPE on the Move

The Boole & Babbage Users Group (BBUG) and ACM's Special Interest Group on Computer Metrics (Sigmetrics) held concurrent and joint sessions in Montreal early this month to bring together theoreticians and "workers in the field."

Attendance figures indicate the membership welcomed the opportunities. BBUG had 112 attendees, up from 89 at the previous meeting, and Sigmetrics reported 124 attendees.

Users further interested in measurement and evaluation can now purchase the two-volume set of papers developed by Share's computer measurement project from 1967-73 [CW, Sept. 4], or they can plan to attend the Computer Performance Evaluation Users Group (CPEUG) meeting Oct. 23-25 [CW, Sept. 25].

VS Just Didn't Measure Up: Samsonite

By Don Leavitt
Of the CW Staff

MONTREAL – The basic objective of any hardware or software evaluation should be cost-effective data processing, and that applies to studies of VS just as much as to other systems, according to analyst Donna Pyle of Samsonite Corp.

Speaking at a session of the Boole and Babbage Users Group meeting here last week, she said IBM failed to convince her to convert VS as "the wave of the future," but economics encouraged her company to investigate any means of increasing processing power without increasing costs.

At an initial planning meeting for the VS evaluation project, a set of guidelines was drawn up to form the framework within which the task was to be executed.

The IBM members of the project "had difficulty accepting our policy of maintaining a position of easy return to OS," she said. They argued Samsonite could not discover the processing potential of VS on its IBM 370/158 without modifying all programs and JCL to take advantage of VS features.

Instead, plans were made to study the effect of various individual VS features. No mass conversions were to be made until the company had sufficient reason to believe it would stay with VS, Pyle said.

While the new software was being systemned and tested, consultations were held with each manager in the department to determine the major concerns in evaluating its performance. A list of critical tests was developed.

A key issue in the evaluation process, Pyle reemphasized, was to counterbalance the expected advantage of VS with its cost. In short, she said, "we needed to know how much of our resources would be required to support VS . . . We needed to evaluate how much better service could be provided by dedicating these resources."

Three Areas of Concern

Concern for service level divided into three major areas, the analyst said. IBM's Customer Information Control System's (CICS) response time had long been a yardstick of system performance and service to the teleprocessing (TP) users was given top priority even at the expense of batch efficiencies when necessary.

Code had been previously developed to monitor CICS performance, including response time at individual terminals. For purposes of the evaluation, however, the company found it useful to reduce this data to simple, manually prepared profiles reflecting the range and variability of response intervals.

In the area of a so-called "third-shift cushion," Samsonite felt it sufficient to manually log the completion time of each night's critical-path processing and thus calculate the buffer time remaining till CICS was due on-line again.

To determine the effect of VS on the testing service level, several new tools were required, Pyle said. A set of "do-nothing" jobs at various classes and priority levels was submitted twice a day, and a manual report was kept of the time lapse between read and execution.

This gave a picture of how effectively the installation was able to service high-priority work and an indication of how much the lowest priority was being allowed to slip.

CW at BBUG

Samsonite also wrote a quick program to determine what percentage of all jobs submitted in the various classes was being processed between the prime hours of 8 a.m. and 2 p.m. If VS only cut back the completion of the day's testing from 8 p.m. to 6 p.m., "it wouldn't really be buying the programmers a whole lot," the analyst said.

Used Benchmark Test

The problem of resource consumption and relative throughput rates was more complex and required more planning, Pyle continued. It was decided to use a benchmark test consisting of actual third-shift processing.

This time frame was critical and, perhaps more important, repeatable as the daytime TP workload was not.

In the midst of the evaluation project planning, the DP staff "finally won a 15-month battle for acquisition of a hardware monitor," Pyle recounted. Plans

(Continued on Page 18)

Navy-Wide CPE Program Staggers As Sites Avoid Asking for Help

MONTREAL – Sometimes sheer size gets in the way of a proposed computer performance evaluation (CPE) effort, especially if its mission and its capabilities are misunderstood both by those who are responsible for the project and those who are expected to benefit from it.

Just such a combination of factors seems to have caused problems for a Navy-wide CPE project that got underway in 1971 and is now being reevaluated, consultant Neil Marshall told a BBUG audience. As part of the reevaluation, Marshall said he would like to contact others working with similar-sized CPE projects.

Where Dreams Are Made

The original plan was to develop a centralized performance monitoring group, under the Naval Command System Support Activity (Navcossact). It was supposed to conduct evaluations of Naval DP sites ("and we've got hundreds of installations!"), improving performance of existing operations and validating or augmenting requests for new equipment.

Advocates of the plan foresaw an eventual need for a staff of 36 highly qualified analysts ("GS-12 or above"), with annual budgets of $600,000 for equipment and $450,000 for travel. This crew was expected to visit and help 84 sites a year, working at each for at least a week and more likely a month or more.

Navcossact agreed with the "study" it got from higher headquarters but felt the project should grow in phases, with an initial staff of nine and the use of one Tesdata Xray 160 hardware monitor. And it should first develop in-house capabilities and a management plan, officials felt.

Part of the plan included servicing only those sites that requested help. On that basis, the staff (which "grew" from nine to 11 in 1972 to seven this year) visited one site in 1970, eight in 1972 and four this year. Its equipment includes only one Tesdata Xray 160 monitor.

But the group has done a fair bit of direct service work and backgrounding with Navcossact, including the development of a CPE methodology and a probe-point library for monitoring various CPUs. It apparently also encouraged the development of various CPE-related activities, Marshall noted.

Rejection

"Clearly no one wanted us, and the program never materialized," Marshall said. He added that the program probably was "overcentralized" and information about it was "underdisseminated."

In addition, the performance measurement group was viewed by many sites as the bad guys, whose very presence meant higher echelons doubted the judgment or management skills of the local site administration.

Members of the group and its administration appear to have overestimated themselves and the capabilities of CPE, Marshall said. "Supervisors wanted and really expected to find one figure which they could judge the capacity of the systems they were studying and the degree to which that capacity was being used."

Now that the group has begun to recognize the problems, it can find out what is going on elsewhere and reevaluate what the Navy really needs and wants from a CPE team at such a high level of command. Obviously, the program could be abandoned but it might be better to restructure it, Marshall added.

(Continued on Page 18)

Kudos for Kolence

MONTREAL – Kenneth W. Kolence, a "software engineering" consultant in Palo Alto, Calif., has won the first annual A.A. Michelson award.

The award, presented this year at a joint BBUG-Sigmetrics luncheon, is given by BBUG in recognition of an individual's "major, continuing and varied" contributions to the field of computer metrics.

In its citation, BBUG saluted Kolence as "scientist, engineer, marketeer and teacher." The users recognized that Kolence "created the field of computer performance measurement" by bringing to market the CUE and PPE software monitors. Kolence was the founder of Boole & Babbage, Inc.

But the citation also took note of work Kolence has done since he left Boole & Babbage in 1971. He is developing a "vigorous methodology" for computer measurement, a BBUG spokesman told the luncheon.

He has postulated a theory of "software physics" and is currently devising the means by which the theory can be applied by DP installations interested in determining how well they are using their equipment.

In accepting the award, Kolence reminded his listeners he was not alone in the field, "even in the early days." He took note of the moral support from – and debates with – Dudley Warner, Dave Morley, Bernard Lichtig and other technicians, as the software monitors moved from idea to reality.

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Report Gets Measures' Meaning Across

By Don Leavitt
Of the CW Staff

MONTREAL – Two roadblocks – content and form – stand in the way of most management-level reports of computer installation performance, but there is an approach that solves both problems, according to David Schumacher, project leader in computer performance analysis at Lockheed Missiles and Space Co.

Speaking to the Boole & Babbage Users Group (BBUG), the analyst admitted there is no general agreement on what constitutes "performance," and – no consensus on how any information can be effectively shown to management.

Part of the problem, he added, is that performance data is expressed in dissimilar units (jobs/day, response time,

CW at BBUG

percentage of jobs on time, etc.) and with dissimilar value ranges (0% to 100%, p to 1.0, 1.0 to infinity, etc.).

First and Foremost

Lockheed attacked the "form" roadblock first, then devised a modifiable list of performance criteria to be presented. The result, Schumacher said, is a reporting approach that can be adopted by almost any installation.

In the design phase of the project, Schumacher's crew wanted to come up with a form that would show weekly changes relative to a norm, exceptional weekly changes, comparative extent of changes between measures and the direction and extent of performance trends.

They also wanted to provide numerical data describing average, high, low and current week's values for each measure and to incorporate as many performance measures as deemed useful in the areas of workload, effectiveness, reliability, availability and utilization.

Finally, they planned to provide a performance report by and for each major functional subsystem (batch, graphics, remote job entry, on-line) and to utilize whenever possible data currently being collected and reported elsewhere. There is no point in making users learn new ways to gather data or the meanings of the data once it is gathered, Schumacher explained.

The team reasoned that an essentially graphic approach probably would be the best way to implement these goals. A simple deviation graph for each measure – regardless of what the measure itself might be – would show changes from a norm as arrows (up for improvement, down for degradation), with the length of the arrow scaled to the degree of deviation.

To indicate if the changes were exceptional, the crew added a shaded band of "usual performance" on either side of the norm line. Obviously arrows extending beyond the shading were the ones with which management should be most concerned.

Next the designers added "stock-market" numerics below each deviation graph. For each measure, they would show year-to-date average, this year's high, this week's value, this year's low and the theoretical best value or direction, Schumacher said.

The deviation graphs and "stock market" figures would only "work," however, if he could overcome the problem of different measures and different ranges. To do this, Schumacher went back to classic data analysis and the idea of standard deviation as a means of "deunitizing" the data he was using.

The standard deviation (SD) is a measure of the dispersion of individual sample values about the mean value for a given set of data. On SD on either side of the norm encompasses 50% of all samples in a normal distribution. Two SDs cover 67% and three SDs should blanket 99%, Schumacher said.

Based on that generality, Lockheed's team settled on a band of "usual performance" ±1.5 SDs from the norm line. And the basic scale on each of the deviation graphs should be one, two and three SDs above and below the line. Any variation beyond three SDs would be specifically shown at the tip of the arrow for that graph, Schumacher decided.

SDs also gave Lockheed a means of showing trends for each measure in clear, simplistic terms. Experience for each measure was split into two subsets: the most recent five weeks and all data prior to then.

The "distance" from current year's best experience, expressed in SDs, was shown for each subset on either side of the 1 in. graph space allotted to each measure. The slope of an arrow drawn to connect the two points showed the trend for the measure.

This simplified trend plot, freshly calculated each week for each performance measure, was included underneath the "stock-market" figures for each factor.

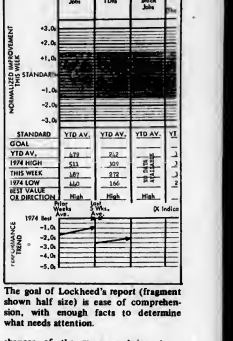
Putting It Together

Having devised the general form of the deviation graph for each factor, Schumacher said the team then put 10 of these graphs across a page, assigning as many as appropriate for measures of the basic categories: workload, effectiveness, reliability, etc.

The actual measures to be charted were determined through conferences with the general managers who wanted the reports and the operational DP staffs who gathered the data and actually ran the systems. The measures differ from category to category as the separate reports are put together for each of the operational subsystems.

The framework permits periodic changes of the measures being documented. Schumacher started with 20 fac-

(Continued on Page 18)



The goal of Lockheed's report (fragment shown half size) is ease of comprehension, with enough facts to determine what needs attention.

Is There a Future for CPE?

Pundits Ponder Potentials, Problems

MONTREAL – Special measurement tools are needed, because today's tools are inadequate for the hardware and software environments they are encountering, Vice-President Tom Hoger of Boole & Babbage told a joint BBUG-Sigmetrics panel of "The Futures of Computer Performance Engineering."

Most of the other panelists agreed with his assessment of current monitoring tools, but disagreed in their visions of what the future would or should include. And that is why the panel title referred to "futures" and not just "future," the sponsors noted.

George Chatfield of Duquesne Systems, Inc. said he sees future needs being met by event-driven monitors, built-in or added to a user's CPU. The concepts behind the future tools "have to extend beyond peripheral measurements and load balancing.

"Software probing systems not built-in should be able to gain control of the operating system, events dictate, to find out why things are happening as they are," he added.

Environments More Complex

Hoger was less definitive in his view of the future tools, but had an explanation of why changes are needed. He pointed to the increased migration to IBM's VS environments and, as a consequence, larger hardware systems. The concurrent shift to the IMS data base management systems, CICS, TSO (the time-sharing option under OS), Hasp and VSAM files are creating a more complex structure in which jobs are to operate, he pointed out.

He added a special plea to user groups to work closely with vendors and to publish guidelines so that all concerned will have a better idea of what should be measured.

Phillip Howard, publisher of *EDP Performance Review*, questioned whether there is a future for computer performance engineering. He noted that many things already could be done by hardware vendors to make their systems more efficient.

But, he added, manufacturers want to see their systems saturated; "that feeling permeates their entire organizations." There is little incentive to help users with optimized software, "and performance is only important as a selling point when they are in competition with another vendor."

Users are at least partially responsible for the vendors' attitude, however, he went on. User demands force development of new products and the vendors spend "most of their R&D money – which is, after all, limited" – in meeting those demands.

Prof. Steven Kimbleton of the University of Southern California said he sees "mission-oriented networks" as the wave of the future, and as they come into existence, control, of resources will become very important.

An integrated approach to the problem is needed, Kimbleton argued, since dollar costs and available manpower have to be used carefully and, especially with the nets, the problem of effective use of resources has to be met at both ends of the hardware spectrum, the mini-based terminals and the large central CPU.

Kenneth Kolence, "father of the software monitor," agreed that an integrated approach is required but with a different implementation than Kimbleton envisioned. The data collected, he said, has to be applied to more than billing algorithms, workload scheduling and history of past resource utilization.

The goal of Kolence's integrated performance evaluation scheme is a tie-in to workload forecasting and the corollary, equipment planning. He declined to name what data should be collected, but "whatever we measure must be adequate for quantitative analysis," adding that ultimately it should be possible to develop unit costs of computing for all or part of a user's system.

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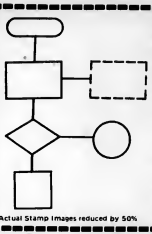

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Classes, On-Site Monitor Included in CPE Program

McLEAN, Va. – Tesdata Systems Corp. has announced a three-part program in computer performance evaluation consisting of a seminar session, on-site hardware monitoring of a participant's computer system and a system profile study involving evaluation and analysis of resource utilization.

This program goes well beyond the theories of performance measurement and deals with the realities of a participant's own computer installation, Tesdata said.

An understanding of why computer performance measurement needs to be undertaken and how it should be approached will be imparted in a two-day seminar conducted by an independent consultant in performance measurement.

The seminars will be conducted in a number of different cities within the coming months, including Toronto, Hartford, Washington, New York and Los Angeles.

Designed for DP managers, senior systems analysts, operations specialists and system planners, the seminars alone will provide comprehensive instruction in performance measurement, the company claimed.

After users have attended the regional seminars, a Microsum 1020-D hardware monitor will be installed in the participant's computer center for five days to gather data on actual system utilization.

At the conclusion of the data gathering, a complete system profile study will be prepared by Tesdata including statistical summaries, histograms, composite plots and profile charts showing present utilization.

Cost of the three-part program, including attendance of one person from the user installation at the public seminar, is $795, a spokesman added.

Tesdata is at 7900 Westperk Drive, 22101.

'Curs' Tells Use Of S/3, NCR CPUs

HUNTINGTON, Conn. – The Computer Utilization Reporting System (Curs) from Real-Time Computer Systems is designed to meet the requirements of the small-scale computer user.

Currently operational on IBM System/3 Model 10s and NCR Century CPUs, the package reports on daily use and idle time, gives summary reports on usage by operation type including, for example, production, test, compile and downtime categories.

An analysis of idle time pinpoints the number of occurrences during any specified period, according to the company.

The time period accounting facilities of Curs can be used to determine when a second or third shift should be initiated, a spokesman said. The idle-time report could lead to corrective action such as rescheduling input from user departments, he added.

Recurring hardware problems resulting in downtime are formally documented so that a program of positive corrective action can be instituted in conjunction with the CPU vendor.

Curs requires a 16K system with a 120-position printer. The package can be acquired under license for a one-time fee of $645 or $33/mo with a full payout in two years.

The vendor supplies object programs appropriate to the license's configuration, a control string and documentation.

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VS Items Tested Found Too Costly

(Continued from Page 14)

were adjusted so the monitor could be used to get measurements on actual production work as well as the benchmark runs.

The benchmark was run, without interference, as a night's actual production under OS, then repeated – after IBM felt Pyle's group had done enough tuning – under equally controlled conditions.

By running those tests, Samsonite learned the third-shift work load was as much tape-bound as core-bound, and the elapsed time did not differ with VS.

A retest of VS with larger blocking factors for the tape files and other relatively minor changes gave better results including, for the first time under VS, more time devoted to problem state processing than supervisor.

A final evaluation of all the results confirmed Samsonite's decision to stay away from VS as its operational environment. But the company made the decision based on knowledge of what "the wave of the future" could do for and to the installation.

CPE Report Planning Breaks 'Roadblocks'

(Continued from Page 15)

tors he thought would be useful. In a four-month span this grew to 60 measures, then dropped back to 41 after review with interested managers.

The factors now being cataloged at Lockheed are "macro measures" such as percentage of reports on-line, number of pages printed and mean-time-between-failures on each of the company's systems. "Micro measures" including CPU utilization and the like have not been carried, Schumacher noted, because the reports are for general management, which is primarily concerned with the effect on the end user rather than machine efficiency.

The technicians concerned with the workings of the machine can have equally useful, comparative, multidimensional, norm-based reports on their interests through use of Kiviat graphs, he added.

Navy Reevaluates CPE

(Continued from Page 14)

Even as it developed thus far, the program was valuable, he said, since it has amassed a fair bit of knowledge and experience in CPE, and a lot of insight into the impact a CPE program can have on its expected client base.

At this point, the consultant added, he would very much like to share experiences with leaders of other projects that are supposed to be monitoring the performance of massive numbers of installations.

He invited anyone interested to contact him through Navocossact at the U.S. Navy Shipyard, Washington, D.C. 20374.

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TP Manager Meets Challenge Handily

Bank of America Links 1,039 Offices

By Ronald A. Frank
Of the CW Staff

SAN FRANCISCO – Managing a corporate telecommunications system differs from company to company depending on requirements. But probably nowhere is this job more challenging than at the Bank of America where 1,039 offices within California have to be interconnected with communications facilities.

The person who plans and implements these systems is Stephen Ernst, who has the rather unassuming title of chief analyst. In actual fact Ernst oversees a staff of 21 that ranges in responsibility all the way from ordering black phones to developing teleprocessing (TP) system software.

The telecommunications department at the bank is divided into four project areas. Eights staffers are assigned to the TP software group, three work on network management and planning, three are in the editing and switching systems group and five deal with communications services and support.

One of the most formidable challenges in operating a communications network in California is that there are 41 different phone companies and the bank does business with most of them, Ernst explained.

About 10% of the network is devoted to some form of data communications, he estimated, and within this framework four major application areas are supported. These include a documentation system using the IBM Administrative Terminal System (ATS), an on-line data capture system to build data bases, CPU-to-CPU data transfer and an interactive computing facility.

Typical of new applications in the data area is the Community Office On-Line System (Cools). Within four years this will put CRTs into 1,000 branches for teller transaction work, Ernst explained. Four pilot offices are already using Bunker Ramo displays and by next year plans call for 100 terminals to be in place, he said.

To implement this network the state is divided into two regions each of which will ultimately have about half of the total terminals. The network will operate under private-line intrastate tariffs, and specialized carrier services such as those proposed by SP Communications will definitely be considered when they become available, Ernst said. But for the time being, the only intrastate private-line services are those offered by existing carriers.

One of the options to be considered in implementing the Cools net is the possibility that an upgrade to IBM's Synchronous Data Link Control (SDLC) might be necessary during the four-year configuration period. One hedge against this possibility lies in the programmable controllers which govern the functions of the Bunker-Ramo CRTs at each site, Ernst said. The controllers will make it possible to change the transmission protocol with a minimum of effort.

A common problem in any communications department is the relationship with the DP staff. At Bank of America both telecommunications and DP people report their views and requirements to an organization called central processing equipment services.

After receiving input from all sides, this group issues a resource requirements statement which is then used by management to decide on a final system. The set-up works well, according to Ernst, and the bank usually gives each department what it needs so that internal conflicts are avoided.

One of the major applications supported by the telecommunications staff is the state Bankamericard system. This system uses dual 360/65s operating under Btam with an IBM 3705 running in 2701 emulation mode, Ernst said.

The system uses Raytheon CRTs and 10 4,800 bit/sec lines operating with Bell 208 modems between data centers in San Francisco and Los Angeles. The CRTs are used for credit authorization calls from retail merchants to the bank.

Asked what he believes will be the major changes in telecommunications, Ernst predicted networks will no longer be tailored to specific applications. Instead a company will configure its own private network and once this is in place, then the applications can be added later.

Ernst sees no future conflicts of interests between the DP and TP departments.

CW Photo by Ronald A. Frank

Stephen Ernst

The DP staff is responsible for serving users within the company, while communications is responsible to the DP staff to support its processing services, he said.

The telecommunications staff is mainly responsible for planning and implementation but does not get involved with operational problems unless they are related to major communications problems.

Although he claims he has never thought about it much, Ernst, at 31, is probably one of the younger chiefs of telecommunications at a major U.S. company. He has been with Bank of America's telecommunications staff for nine years and in his present slot for three years.

User Returns to IBM After 'Independent Affair'

By Edith Holmes
Of the CW Staff

TORONTO – Better service support and further enhancements persuaded the University of Toronto to return to an IBM terminal control unit after a two-year affair with a Memorex device.

The controller, an IBM 3705, will replace a Memorex 1270 terminal control unit in a communications environment requiring the ability to adapt to differing terminal codes and speeds, said Samuel Goldfarb, interactive systems manager for the university's computer center.

Goldfarb said the Memorex unit originally replaced an IBM 2703 control facility in interfacing a 360/65 to over 180 interactive communications terminals using BCD or Ascii code and located throughout the university's three Toronto campuses.

"We went to the Memorex device in August 1972 to acquire auto-speed selection on our dial-up facility," Goldfarb noted. "The 1270 hasn't provided us with many problems. But with only one Memorex unit, when we do have some difficulty, we can't depend on a high level of support."

He explained the computer center's decision to go back to its mainframe manufacturer dealt, in part, with the level of support the university could then demand.

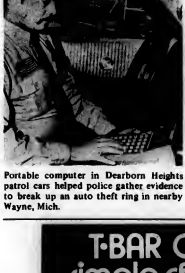
In addition, Goldfarb commented, his operation gained three major enhancements with the IBM 3705.

"Because the unit is programmable, we'll be able to instruct the controller to perform additional measurements and statistics on-line," he said, noting the computer center has purchased a software package specifically designed for the 3705 from Comm-Pro Associates in California.

The university presently supports three different software systems in its interactive computer facility: APL, Conversational Programming System (CPS) and Administrative Terminal System (ATS). Under the 3705, these three systems can be logically grouped together under one phone number, he added.

In considering a controller to serve the system's 4,500 users, Goldfarb said the computer center looked at Digital Equipment Corp.'s PDP-11 as well.

"The 3705 was simply the more convenient choice for us to make because of the option it gives us to experiment on a rental basis," he commented.



Portable computer in Dearborn Heights patrol cars helped police gather evidence to break up an auto theft ring in nearby Wayne, Mich.

More Than Junk Found in Junkyard

WAYNE, Mich. – When city and state police here recently raided a junkyard believed to be the headquarters of a stolen car ring, they were confronted with the task of checking the vehicle identification numbers of more than 500 automobiles to see if any were stolen.

Following their usual check-out procedure would have tied up manpower and communications circuits for hours, so Wayne police called for help from the nearby Dearborn Heights police department. Each of the 15 Dearborn Heights patrol cars carries a two-way Arcom MCT-16 terminal manufactured by Atlantic Research Corp.

As workmen pulled each car from the junkyard stacks, a policeman relayed the car's vehicle identification number to a Dearborn Heights patrol car. Using the terminal and programs developed for the Arcom system by Computer Sciences Corp., the identification number was transmitted to a General Automation minicomputer at police headquarters.

The minicomputer in turn sent the number to the State Law Enforcement Information Network computers in Lansing which checked it against a list of stolen cars and sent the answer back to the patrol car.

Policemen in the junkyard usually knew within three or four seconds whether or not they had a "hit" (stolen car). More than a dozen stolen vehicles were found among the first 80 cars checked out.

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Two Acoustic Couplers Join Omnitec Family

PHOENIX – Omnitec Corp. has introduced two acoustic couplers.

With fewer components than previous models, the Model 701B originate-only coupler is designed for remote data entry and retrieval systems, particularly in the time-sharing environment, according to the firm.

The unit features both acoustic and hardwire modes, simultaneous TTY and EIA line interface and half- or full-duplex switching.

Priced at $341, the coupler can be delivered off-the-shelf.

1200A Coupler

A second coupler intended for use with remote data entry and retrieval systems, the 1,200 bit/sec unit was designed specifically to interface with Bell's 202C reverse channel modem over the switched telephone network, the company said.

The Model 1200A will interface with almost any 1,200 bit/sec time-sharing system and can be used in either the acoustic mode where portability is required or with a data access arrangement in permanent installations.

The 1200A operates in two line protocol modes, normal and automatic. In the normal mode, line control is established via RS-232 signals originated from the remote terminal. In the second mode, line control is established by intelligence within the unit, the company said.

Available within 30 days, the coupler costs $895.

The firm is located at 2405 S. 20th St., 85034.

Omnitec Acoustic Coupler

SP Tariffs Added To Net Optimizer

ANN ARBOR, Mich. – Data and other tariffs of the Southern Pacific Communications Co. are now available as an option in DMW Telecommunications Corp.'s Hilo-74 network pricing and optimization program.

While Southern Pacific tariffs are the first specialized carrier tariffs to be incorporated in the Hilo program offering, DMW anticipates other specialized carrier and satellite tariffs will be added to its program in the near future.

The company's package is said to contain capabilities to accommodate all Bell System interstate private-line tariffs including Hi-Lo, the proposed DDS tariffs and the Southern Pacific tariffs.

Details may be obtained from the company at 2975 Hickory Lane, 48104.

AJ Adds RO Model To 630 Printer Line

SUNNYVALE, Calif. – Anderson Jacobson, Inc. has added a receive-only model to its 630 line of printers.

Designed to be used in conjunction with a CRT or as a stand-alone unit, the 630 RO is identical to a Model 630 minus its keyboard.

The non-impact thermal printer operates full-duplex and half-duplex.

Available within three months, the 630 RO sells for $2,700 from the firm at 1065 Morse Ave., 94086.

Package Allows T-Comm to Support Sanders Series 800 CRT Terminals

BOHEMIA, N.Y. – Periphonics has developed a software package designed to enable its T-Comm 7 front-end users to employ Sanders Data Systems Series 800 CRT terminals on their networks.

No Recoding

The software module can be installed with the T-Comm 7 operating system without recoding any of the previously installed modules, according to the firm.

T-Comm 7 communicates with the Sanders terminals in an asynchronous or synchronous half- or full-duplex mode. The firm said asynchronous transmission rates can be specified from 110- to 1,800 bit/sec; synchronous from 2,000- to 9,600 bit/sec.

8- or 7-Level

In addition, transmission codes can be 8-level Ascii or Ebcdic, including parity or 7-level PTTC/BCD or PTTC/EBCD.

The software module costs $170/mo on a three-year lease from the company, 75 Orville Drive, 11716.

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Everglades Environment Protected

MIAMI – A technological chain of devices is helping to preserve Florida's Everglades National Park through environmental assessments made possible by teamwork between the U.S. Geological Survey and Nasa's Goddard Space Flight Center, Greenbelt, Md.

The ecological balance of the 1,440-sq-mile-area is surveyed by 20 small data collection platforms (DCPs) situated strategically for water resource management. The DCPs radio their readings to Nasa's Earth Resources Technology Satellite when it passes overhead and the satellite relays the reports to one of two tracking stations.

Data is sent from these tracking stations to the Geological Survey's Miami office, where a Hewlett-Packard Model 30 programmable calculator processes the information into suitable format for users.

Now that the DCP network is operational, users can have data from the most inaccessible regions in the Everglades – usually within 25 to 40 minutes after measurements are taken.

8-Level to 5-Level Interface

Unit Converts Teletype to Telex Code

COLUMBUS, Ohio – A code translator, designed to enable a 75- or 110 bit/sec Model 33 or 35 Teletype to be used on the 50 bit/sec Telex network, is now available from MI² Data Systems, Inc.

Performing 8-level (Ascii) to 5-level (Baudot) and 5-level to 8-level code conversions, the basic 730 code translator provides a 20 mA loop current interface for teletypewriter applications and an interface to be used with the MI² RCU-1 Telex control system, according to the firm.

Other applications of the 730 include providing an interface between 8-level input/output EIA devices, such as CRTs, and the Telex network and permitting real-time communication between 8-level and 5-level devices or systems, the firm said.

The code translator comes with a variety of options, including a self-contained restraint function to limit data throughput, a buffer storage of answer-back drum message and an EIA data signal interface.

Starting just under $300, the 730 is available from the company at 930 Kinnear Road, 43212.

CRT Net Speeds CPCN Telegrams

MONTREAL – The introduction of video display units linked to computers has speeded up the transmission of telegrams at the CPCN Telecommunications message center in Montreal.

Now telegrams are telephoned into the center at a rate of 2,000 a day by members of the public. They are then formatted on CRT screens and transmitted by computer to telegraph offices elsewhere in Canada for delivery. The CRT units used are capable of transmitting telegrams in both French and English.

Montreal has 44 terminals in operation and 16 terminals installed in Vancouver.

The system, designed and built in Canada, has cost CPCN about $600,000 to install.

Reno Maitre D's Keep Their Cool

RENO, Nev. – Keeping track of several thousand restaurant reservations made up to 30 days in advance would be enough to make the most unflappable maitre d'hot e consider turning in his tuxedo.

But at Harrah's resort hotels in Reno and at Lake Tahoe, Nev., each maitre d' receives a computer printout instead of a scribbled list. And that printout includes each customer's name, the number of people in the party and which of two or three nightly shows they're scheduled to see.

Who Needs What

In addition, special alphabetic code letters after the name tell him whether the customer has requested the nonsmoking section, ordered a birthday cake or needs extra room for a wheelchair.

Operators stationed at 11 IBM 3270 display terminals key in and confirm reservations made via toll-free telephone lines within 59 seconds.

The final printout is transmitted each afternoon from an IBM 370/145 to printers at each theater-restaurant.

By the time you've read this ad, Equitable Life Assurance Society's new data link could have transmitted a full-length novel, plus a couple of short stories and a life insurance policy, including all the fine print.

Working at 96% of rated speed (nearly two million characters a minute), it transmits a full reel in 18 minutes.

It's one of the fastest systems of its kind in the world. We developed it to help Equitable ship data from New York headquarters to their new computer facility over 100 miles away. This high-speed data link virtually brings the new facility to the doorstep of the New York office.

Essentially, it's two magnetic tape systems, each built around two GTE IS/1000 communications computers. These computers store and concentrate data, control transmission from high-speed modem to high-speed modem over telephone lines and a microwave network, and also control a teletype console which provides hard-copy records of key information.

Duplicate data bases are located at both ends, so different generations of jobs can be performed at either location.

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Work Through Home Terminals

DP 'Highways' Could Keep 'Em Down on the Farm

By Patrick Ward
of the CW Staff

COLLEGE STATION, Texas — "Electronic highways" linking workers at home terminals to distant employers may be one solution to the problem of declining rural populations, according to a researcher at Texas A&M University here.

Stanley E. Wilson, coordinator of the university's APL laboratory and author of a paper entitled "Rural Development Through Electronic Technology," has proposed a new kind of rural electrification policy using computers to keep rural living both feasible and appealing.

As agriculture become more a scientific enterprise, the number of jobs in rural areas has declined, Wilson explained in his paper. This caused an urban migration, leaving fewer people in the rural areas to support local institutions that help make up the "quality of life" there.

One solution has been recruiting urban firms to locate plants in the countryside, but companies tend to locate in cities for labor and transportation advantages and often have to be expensively subsidized to come to rural locations, Wilson stated.

Some rural people can commute to city jobs, but not all live close enough to urban areas to do this, he wrote.

Another Possibility

But what if an employee both lives and works in the countryside — and is employed by a firm based in a city?

Two things are making this alternative feasible, Wilson said. First, workers in a service-oriented economy are increasingly doing "information processing" types of jobs rather than producing physical objects.

And the technology exists for a "total electronic information system" that allows rural workers to do their jobs at home while giving them and their families access to urban educational and cultural services as well.

A rural resident could just make a local phone call to a nearby town where information from his terminal would be fed into a microwave system connecting the town with an urban center, Wilson said.

The unused capacity of cable television links is another possible information vehicle, he added.

The worker in his home could use any of a number of types of terminals to interact with computer files located elsewhere, Wilson said. If a worker changed his job, he could stay in the same home and work with his new employer's computer system, Wilson said.

With CRT screen and light pen in the den, draftsmen, designers, engineers and commercial artists could do much of their work at home, Wilson postulated.

A computer could transmit a whole library of material to a user's home screen, Wilson said, allowing scholars and students to work at home.

Video tapes of cultural events, art collections and adult education courses could be stored in computer files as well, adding enrichment to rural life, Wilson continued.

Much of the network Wilson envisioned could be publicly built and operated. While the absolute cost of such a system would be very great, he conceded, it would relieve the rising tide of traffic needed for face-to-face communications at less cost than expansion of physical transportation systems.

Wilson described ways to manage implementation of such a system. The technical capability is already here he said, with the possible exception of interfacing a large flat television screen to a computer and light pen.

Government research could accomplish this, as well as developing hardware and operating systems for the task, he said.

A copy of Wilson's paper is available at no cost from the APL Lab, Agricultural Economics and Rural Sociology Department, Texas A&M University, 77843.

Quota System Flunks Installation

DAVENPORT, Iowa — A certified information computer operation here has been unable to meet a federally required anti-discrimination quota because too few blacks have applied.

Theoretically, the operation should have at least one black man and woman worker, but there are none among the project's 39 employees.

Clifford Brown, director of the computer operation, said there are few qualified black keypunch operators or computer technicians in the area, and none has applied for the positions.

Although area colleges and state employment services have registered black job seekers, none has been referred to them, Brown said.

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Bits & Pieces

DEC's DMS-10 Add-On Memory Expandable to Eight Ports

LAKE SUCCESS, N.Y. – An add-on memory for Digital Equipment Corp.'s (DEC) Decsystem-10 from Dimensional Systems, Inc. offers multiport capability.

The DMS-10 memory system is expandable from one to eight ports, which a spokesman said provides greater versatility and capacity for adding peripherals.

Features include plug-to-plug compatibility with the Decsystem-10, magnetic core memory and a cycle time of 750 nsecs.

The basic system is available with 16K, 32K, 64K or 128K words of 40-bit memory.

The 16K unit costs $36,900 with quantity discounts available from 6 Nevada Drive, 11040.

'Orbit' Feature Makes Scanner Time-Independent of Host CPU

CHATSWORTH, Calif. – A feature known as "orbit" has made Chatsworth Data Corp.'s high-speed optical scanner time-independent of the host computer, the company said.

The Model 1502-TI scanner with the orbit feature eliminates the computer's need to issue stacker selection commands within a specified time period, allowing all four output stackers to be selected independent of time, according to the company.

"When in orbit," the company said, "the card spins in a circular motion at 1,700 rev/min.

Although the orbit station is an integral part of the Stacker 1 selection hardware, it need not be entered if stacker selection is made by the computer before the card reaches the orbit station.

The orbit technique is said to maintain a high throughout potential for large volume input applications while eliminating time restrictions normally associated with high-speed systems.

The 1502-TI is priced at $75,000 with a delivery time of 120 days from the company at 9732 Cozycroft Ave., 91311.

Univac Agrees to Service Equipment Upgraded by Matrix

DALLAS – Matrix Electronics is offering add-on memory in 8K increments for Univac's 9200 and 9300 Series of computers, and Univac had conditionally agreed to service the Univac portion of upgraded equipment, Matrix said.

An initial 8K memory with interfacing electronics costs $8,780, with additional 8K increments up to 64K priced at $4,000 from the company at 810 Sunnyside, 75211.

Utility Nixes IBM Upgrade, Finds Less Costly Solution

By a CW Staff Writer

COLUMBIA, S.C. – South Carolina Electric and Gas Co. was one of the first users to buy an IBM 370/145. The system seemed perfect for it until its work load grew and it started converting to virtual memory applications.

With the conversion, the utility also needed more main memory, but it found adding main memory was not easy.

The utility's 145, purchased in March of 1972, consisted of a 256K CPU and a 3345 storage and control frame containing an additional 256K of memory, for a total of 512K.

When the company started shopping for add-on memory, it learned an IBM upgrade would be very expensive and might mean giving up some of the equipment it already owned, at an estimated loss of 40% off the purchase price, according to the utility's manager of computer services, John M. Dickerson.

IBM's solution was get rid of the 256K of memory housed in the separate 3345, which meant also giving up the integrated storage control for the 3330 disk system; next, get rid of the integrated file adapter that controlled three 2314 disk drives; and, finally, install a 768K memory.

The price tag read $550,000.

One Exception

"All the vendors we talked to agreed with IBM's approach except CIG Computer Products of Stamford, Conn.," Dickerson said.

CIG suggested installing an additional 512K of memory, enabling the company to retain the original equipment configuration while at the same time upgrading to 1 M bytes of memory.

A three-year lease would cost $2,950/mo.

Since the utility was unwilling to make another purchase commitment and was unsure how long the 145 might fulfill its needs, this arrangement seemed ideal – but it meant sharing a port.

While CIG was reluctant to describe the details of the shared-port installation, a spokesman described it as a "unique interfacing concept, much like multiplexing."

He added the CIG memory's mechanical design and emitter-coupled logic allowed CIG to attach the memory despite extremely tight timing tolerances.

The installation was completed in July, and "once we got up, we ran without any problems at all until last Sunday when a couple of double-bit parity errors started occurring," Dickerson explained.

That was corrected in a couple of days by replacing an error correction logic card.

No Installation Downtime

CIG's installation took two weeks. "The first week they installed the new 512K and allowed us to run on our original 512K. The second week they made some minor timing adjustments during the night on problems we ran across during the day.

"We were never down at all during the installation," Dickerson said.

Installation problems centered around the initial interface between the 3345 and the CIG memory.

The only modification to programming was in control storage, according to Dickerson.

"CIG's software people modified the control storage to tell the machine what size memory you have during initial microprogram load (IMPL) – the machine comes out and asks you if you want the CIG memory on-line or not, and all you do is answer accordingly," Dickerson said.

"You can also run with 512K all IBM, 512K all CIG or you can run with 256K or IBM and 256K of CIG. It works real well," he said.

Different combinations allow the user to dial out a segment of memory with which he may be having problems and use what's left.

At the present time, the utility is converting its 80 GTE 7000 Series terminals to IBM 3270s, which means running Faster VS, a software system needed for the GTE CRTs, parallel with IBM's Customer Information Control System (CICS).

Functions performed on-line include payroll, remote job entry, order entry, inquiry and customer billing.

In addition, the programming and engineering departments have access to the system, with engineering using it to plan power flows and stabilities.

Since the installation, the utility has increased throughput by 50% or more, depending upon the job stream. In addition, it has increased the number of partitions it can run from two to six.

DEC Reduces Prices On 4K, 8K PDP-11/05s

MAYNARD, Mass. – Digital Equipment Corp. (DEC) has reduced prices up to 23% for six PDP-11/05 minicomputer models in 4K and 8K configurations.

The lower priced PDP-11/05 systems include programmer's console, terminal interface, line frequency clock, automatic power/fail restart, four level automatic interrupt and direct memory addressing.

Typical price reductions are: a 4K PDP-11/05 from $4,795 to $4,395, and an 8K PDP-11/05 from $6,495 to $4,995.

Itel's IBM 50s Act Like 370s In 360s' Clothing

By Vic Farmer
Of the CW Staff

SAN FRANCISCO – How does a leasing company sell out an inventory of IBM 360/50s? By making them look and act just like members of the 370 line.

And that's what Itel said it has accomplished with the design of its Super 360/50.

The recipe for a Super 50 has some simple ingredients: a semiconductor memory, IBM 3330-type disks and 3420-compatible tapes. But the 370 flavor comes from a specially modified DOS [CW, May 29] that simulates DOS/VS.

The user of the Super 50 can program his system as if it were a 370 under virtual memory, Itel claimed.

Itel configures the system with twice the size of main memory a user would need with a 135 and then emulates virtual memory in the larger main memory.

For most users of IBM virtual systems, Itel claimed, the most practical configuration would be using a 256K CPU with 256K of virtual backup.

Configurations with greater proportions of virtual to real memory can cause a high overhead with somewhat degraded performance, Itel said.

In any case, the firm claimed, a 512K 50 can outperform a 256K 370/135 and, more specifically, it said the 135 will at best only perform at 85% of the 50's throughput.

The system is priced about $4,000/mo less than a 135 under a conditional sales contract that gives full ownership to the user in three years. Itel has priced a 512K 50 with four 100M-byte spindles and four 3420-type tape drives at $17,600/mo.

Users needing two CPUs instead of a 512K 370/145 can acquire two 512K 50s, and while the dual 50s will cost about $1,600/mo more, each will perform at about 65% of the 145, Itel said.

The user gets 30% greater performance in addition to the security of having two systems, the firm added.

Itel approached the link-up of 100M-byte/spindle drives to the Model 50 by substituting a slower motor giving a disk speed of 280 rev/min and a 625K byte transfer rate, instead of the 370's 360 rev/min and 806K rate. The packs are interchangeable.

In the modified DOS, Itel said users have the capability to run five partitions, gain relocatability of programs and have integrated spooling.

The first installation of a Super 50 is scheduled in Atlanta this week.

Itel is at One Embarcadero Center, 94111.

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Includes Floppy Disk File

EDPA Develops Adjuncts for General-Purpose Minis

ATLANTA – Environmental Data Planning Associates, Inc. (EDPA) has announced a flexible disk file, a printer and a word processing system for use with several general-purpose minicomputers.

The EDPA 400 Series flexible disk file with controller, accommodating up to four drives, is implemented on a board occupying one I/O slot in any Data General Nova computer.

Unit price, which includes the controller and one drive, is $3,000; a dual-drive system is priced at $4,000.

The ED-1200 Series printer is available as a keyboard/printer or as a print-only output device. Each prints at an average of 30 char./sec, and both horizontal and vertical tabbing is provided.

The keyboard/printer is available as a teletypewriter replacement or with a parallel interface that provides a 96-character upper/lower case character set with optional two-color printing.

Each unit is said to print at 132 char./line, eight line/in. and interface with Data General, Digital Equipment Corp. and Varian minicomputers.

The print-only model is priced at $3,500; the teletypewriter replacement with keyboard option, $3,700; and the parallel interface and keyboard, $3,700.

The ED-2201 word processing system is designed around the Nova line of minicomputers for use with a keyboard/printer and flexible disk drives.

EDPA said the ED-2201 provides a dual-use typing and word processing system and is available at a single station price of $1,405.

EDPA is at Suite No. 700, 1447 Peachtree St. N.E., 30309.

Mini World

Plotter Includes Microprocessor

PALO ALTO, Calif. – The DP-1500 plotter from Glaser Data Co. has interface cards said to provide plug-to-plug compatibility with most programmable calculators, minicomputers, tape and disk units and modems.

The line-slope microprocessor in the plotter controls pen movements between two defined points. The DP-1500 offers an accuracy of .004 in. across the total 18-in. by 22.5-in. plotting table area, with speeds up to 2.8 in./sec, the company said.

The internal symbol generator can produce 55 different alphanumeric characters in response to standard Ascii codes. Size, position and direction of the symbols also can be selected at the same time.

Four limit switches define allowable movements along the axes. The paper is held down by vacuum, and an optional paper advance is available for unattended drafting purposes.

Price of the DP-1500 is $11,000 from the firm at 225 Forest Ave., 94301.

Flexible Disk Subsystem Expandable to Four Drives

CANOGA PARK, Calif. – Icom, Inc.'s FD360 flexible disk subsystem has hardware interfaces for Intel's Intellec-8 and Intellec-8/MOD80, and National Semiconductor's IMP-16P, IMP-16L and IMP-8P microcomputers, as well as Intel's 8008 and 8080 microprocessors.

Software operating systems now available for the Intellec-8 provide capabilities such as disk-to-disk assemblies and edits, disk-to-memory program loading and named disk files. Versions for the National IMP Series are being developed.

The basic FD360 is expandable to four drives (two drives in the main chassis and two drives in the expansion chassis), with a single-drive system priced at $2,350 and a dual-drive system at $3,000. Delivery is 45 days from Icom at 6741 Variel Ave., 91303.

Shugart Links Drive System To DEC PDP-8 and 11 Minis

SUNNYVALE, Calif. – Shugart Associates has interfaced its SA3900 flexible disk drive system to Digital Equipment Corp.'s PDP-8 and PDP-11 minicomputers.

The disk system allows a storage capacity of 6M bits for $3,000.

The basic two-drive system includes a controller/formatter, interface board, I/O driver programming tape and a cable connector. Up to eight drives can be attached.

The firm is at 335 Soquel Way, 94086.

Memories Pledged in 10 Days

FORT LAUDERDALE, Fla. – Harris Corp.'s Computer Systems Division (formerly Datacraft) is promising 10-day delivery anywhere in the U.S. for its PDP-11 add-on memory systems.

Single unit price for the system ranges from $2,700 for the 8K system to $18,525 for a 112K machine. The firm can be reached at P.O. Box 23550, 33307.

LCS Adds Diablo Option

SPRINGFIELD, Mass. – LCS Corp. has added the Diablo 30 char./sec printer as an option on its Compu-Text word processing system.

The Diablo printer is priced at $7,500 from LCS at 31 Elm St., 01103.

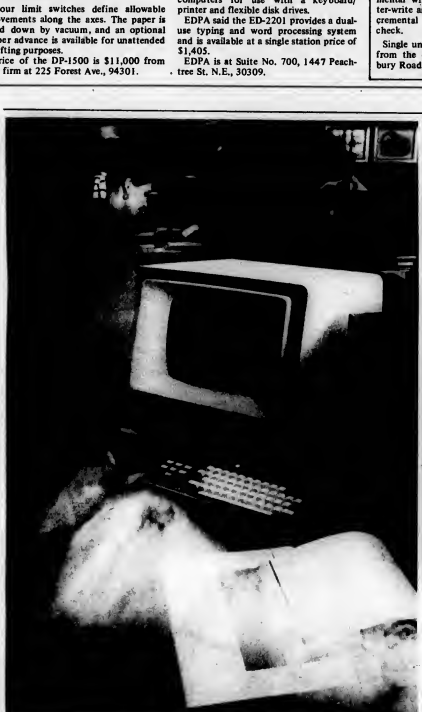
Kennedy Offers Buffered Formatter

ALTADENA, Calif. – The Kennedy Co.'s buffered formatter for synchronous tape transports uses a random-access buffer, divided into two independent memories, for uninterrupted recording of asynchronous data received at rates up to 250 kchar./sec, the company said.

The Model 9217 provides synchronous tape control and the formatting electronics, while the Model 9217B supplies buffering and memory control.

Standard features include incremental write and formatting, read-after-write and automatic correction, incremental read and memory error check.

Single unit price is $4,000 to $5,500 from the company at 540 W. Woodbury Road, 91001.



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Research Firm Keeps 'Families' Updated

MANHASSET, N.Y. – A small computer system is being used here to maintain the updated records of sample families for a market survey company.

Home Testing Institute (HTI) employs an NCR Century 50 to monitor such changes in the 33,000 sample families it polls on location, family size, occupation and income, an HTI spokesman said.

By continually updating its records on these families, HTI can more readily assure its clients of an accurate survey sample.

The software permits storage of information under a variety of demographic headings.

"When clients call with very specific requests, we're more likely to be able to provide them with representative samples," he noted.

In the past, HTI maintained these files on punched-card equipment but outgrew the system. "We sell a job on the basis of whether we have certain information,"

Magnetic disk packs insure a quick response to clients' queries at HTI.

the spokesman commented. "If we have to sort through 60,000 cards looking for different criteria, it's a long, tedious task."

Now magnetic tape files maintain the histories of volunteer families, he remarked. Files are updated through information initially recorded by the system on magnetic disks.

In addition to printing the data requested, the system is used to print labels and telephone interview lists and to prepare marginal reports of tally counts.

R&D Lab Slashes Budgeting Time By Subbing Mini for Calculator

By Patrick Ward
Of the CW Staff

SAN FRANCISCO – The price of electronic calculators may be coming down every day, but an R&D laboratory here found it could save a lot of expensive time in budgeting new projects by doing the job on an in-house minicomputer instead.

A project requiring 57 employees working on 12 defined tasks previously took 16 man-hours to budget using electronic calculators, noted K.W. Harms, deputy associate director of the Far West Laboratory for Research and Development.

That same task now takes only two hours with the use of the "Budgeter" interactive budget system the laboratory developed to run on its 64K Varian V73, Harms said.

As a nonprofit organization, supported by funds from the National Institute of Education, Department of Health, Education and Welfare and other public sources, Far West personnel continuously must estimate costs of its services for numerous research projects on education.

A budgeting session starts with estimates of the number of work-weeks required by various skills (writers, mathematicians, photo technicians, etc.) to complete a given project.

The only input the V73 needs to project the budget is the work-week estimates and skills, denoted by employee numbers, in the form of punched-card data or console input.

On file in the computer's core memory

Mini World

is data giving each employee's basic pay, fringe benefits, related share of occupancy (building rent) costs and other overhead costs.

After the input data is read into the V73, the computer automatically multiplies the work-weeks estimates by the employee costs, including benefits.

The computer queries the operator at the console if a printout of cost extensions by individual employee and task is required.

A "yes" response provides this detail and summarizes the total costs of all employees involved in the project.

Further operator-computer interactive work can result in projections of occupancy costs or occupancy and overhead costs in addition to pay costs.

Evaluates Budget Slashes

Laboratory officials can also use the system to evaluate the effects of budget costs on projects and to find ways of trimming the laboratory's expenses.

The laboratory uses Basic in its interactive budgetary work but also uses the minicomputer for statistical applications in Fortran and accounting systems, including payroll, written in RPG-4.

Harms said the laboratory selected the minicomputer unit over a number of alternate small computer systems chiefly because of price. A substantially equal IBM System/3 would have cost almost 50% more than the $120,000 price of the laboratory's configuration, Harms said.

Other than the processor, the system includes a Varian 300 card/min reader, a 1,100 line/min Data Products Corp. printer, a 9-track 800 bit/in. tape drive and California Computer Products, Inc. IBM-2311-type disks.

A Texas Instruments Silent 700 serves as the console terminal.

Varian supports all of these devices, Harms said.

Dot Matrix Printer Handles Large Letters

HUDSON, N.H. – Centronics Data Computer Corp. has introduced a serial dot matrix impact printer that it said can print alphanumeric characters in mixtures of just about any size.

The Centronics Model 101S, a 132-column multicopy machine, can print characters from one-tenth in. high, to newspaper front page banner headline size,

In addition, the 101S can print standard size characters at 165 char./sec.

A software routine assembles character segments to form any desired character, according to Centronics. In addition, all characters in a given line can be printed double width and elongated through transmission of an octal 016 code.

The 101S receives 8-bit Ascii parallel data input; serial data input to 9,600 bit/sec is available as an option.

Priced at $4,495, delivery is 60 days from the firm here in Hudson, 03051.

The Big Difference Your Computer Won't Even Notice:

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Washington-Lee is one of several dozen financial institutions in Virginia, Maryland and North Carolina tied into the specialized computer network of Data Systems Corporation.

The Data Systems mainframe is a Burroughs, so Washington-Lee started off with Burroughs TC 700 teller terminals for daily transactions: savings, mortgage loans, Christmas clubs and so on.

Then they added some INCOTERM SPD® 10/20 Intelligent Display terminals to the network. At Washington-Lee, INCOTERM works side-by-side with the TC 700's. The mainframe can't tell them apart.

INCOTERM's job is to process a major portion of Washington-Lee's mail transactions, such as savings, mortgage loans, Christmas clubs and so on.

In addition, INCOTERM is used to check on the status of accounts and to enter all alpha information.

Management uses INCOTERM to monitor daily activity in the 13 branches.

The TC 700 does the same jobs. INCOTERM just does them faster. According to Washington-Lee's Data Processing Manager, it prints totals in less than half the time.

Today, all kinds of financial institutions are banking on INCOTERM equipment at over 300 locations throughout the world. For demand deposits. Savings deposits. Certificates of deposit. Installment, mortgage and commercial loans. And for automated, on-line branch information systems.

They use INCOTERM because they want to protect their original investment in equipment and software. And because they want to get the job done better, faster, for less money. INCOTERM is compatible with any on-line banking system now in use or planned for the future.

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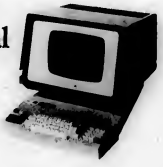


More Flexibility, Better Forecasting

'Paperless' Factory Keeps Pace With 20% Growth Rate

By Donald D. Zamzow
Special to Computerworld

WAUSAU, Wis. – With the help of computers – following through on decisions made in the late 1960s – Drott Manufacturing is evolving into a paperless manufacturing operation. The result: tighter control, more flexibility, better forecasting and few expansion problems despite a 20% annual growth rate.

Drott makes heavy-duty hydraulic earth-moving and contruction equipment. Sales have grown from $12 million in 1961 to nearly $80 million last year, while new products and options have steadily increased the complexity of the manufacturing operation.

To support the manufacturing side Drott has developed two computer models that let the firm operate as if it managed two businesses – one model helps forecast and plan operations, the other is a "real world" system that tracks and processes orders.

Eventually, a computing center is planned that will run with a minimum of human supervision, filling the storage, routing, processing and reporting requirements of hundreds of users at any place and any hour.

Forecasting

Historical data is almost useless in forecasting future sales, inventory and manpower needs in a business as fast-growing as ours. The past just doesn't apply.

The models ignore production capacity at the outset and focus on order backlogs and inventory in the field to produce month-by-month basic assembly forecasts. The forecasts are further refined by computer after they've been examined by management.

After pairing with all bills of materials, these files are organized under IBM's Data Base Organization and Maintenance Processor (Dbomp). This is a critical step, since 65% of any Drott product is made of purchased subassemblies.

Updating monthly, the assembly forecast represents a dollar, labor and production resource commitment and is the standard against which Drott projects all its needs as far as a year ahead. With this much lead time to optimize inventory, Drott has been able to produce 20 to 25 turns a year among high-volume, high-cost items.

The supply parameters in the computer trigger the buying, deferring and cancellation of decisions which, in the final analysis, give no safety stocks at all – only those needed for production and service are kept on hand.

In preparing large volume purchase orders, Drott commits itself to a schedule of dates and quantities. The firm indicates not only its near-term needs, but projected needs over the next 12 months.

Today, this system involves a lot of paper. But in the future, electronic terminals will eliminate stacks of printouts.

Instant Data Communications

The Dbomp-managed files provide both a perpetual inventory and perpetual purchasing system. They quickly assimilate receipt-of-goods information, assigning the parts onto the assembly floor at two plants.

As arriving materials are inspected and accepted or rejected, that information, too, is entered by way of IBM 2797 data entry units. In storage, the parts and materials are called onto the assembly floor at system direction.

At each step in the data entry process, a System/7 updates master records in the 370 through a computer-to-computer linkage and eliminates pounds of paper. It is estimated the inventory system keeps a 99.75% accurate inventory record.

Computer-produced work orders and bills of materials currently are used as each unit moves through assembly, inspection and shipment. Terminals will eventually assume these functions. Terminals already are used to collect labor reports from production facilities and assembly floors.

As an employee completes a labor operation, he enters his identification, the work order and the number of parts involved. The computer adds the time of day to calculate station production.

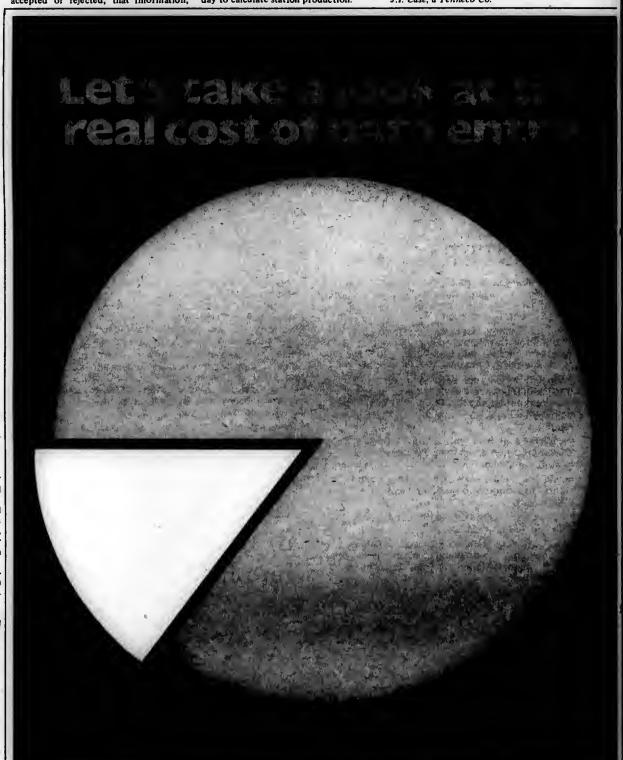
Foremen are then alerted as to any stations that may be falling short of standard. They can detect trends on machine and tool wear, production snags or any worker difficulties before they can become a serious production bottleneck.

Order Processing

When an actual order is received, it is entered into the 370 by generic order code. The computer verifies the availability of parts for the ordered machine, compares the data with the forecast and examines its files for item availability and production scheduling.

By the time assembly is complete, the system has made inventory adjustments, totaled labor and parts values and applied all information against the machine order number for invoicing.

Donald D. Zamzow is assistant controller of Drott Manufacturing, a division of J.I. Case, a Tenneco Co.



Bright Tape Formatter IBM-, Ansi-Compatible

SUNNYVALE, Calif. – Bright Industries, Inc. has introduced an IBM- and Ansi-compatible tape formatter called the Model 2900.

Key features of the 2900 include 7- or 9-track NRZI and phase-encoded or dual formats available individually or together.

Other features include single or dual port, error detection and correction in the phase-encoded models, dual speeds, illegal command detection, internal or external parity options and daisy-chain operation.

The 2900, which includes a power supply, is priced from $1,200 to $3,300 depending on configuration. The company is at 686 W. Maude Ave., 94086.

Board Economizes for D-116H

FAIRFIELD, N.J. – A 16K by 16-bit memory board with a total cycle time of 960 nsec from Digital Computer Controls, Inc. reduces the number of memory boards needed for maximum mainframe storage in the company's D-116H computer.

Each of the fast-core memory boards plugs into existing D-116Hs without clearance problems, the company said.

The unit costs $3,180 from the company at 12 Industrial Road, 07006.

Suggestions for Tightening Security

She Politely Held Door Open—And Admitted 'Intruders'

By Walter M. Strobl
Special to Computerworld

Not too long ago we were asked to assess the security of a computer area of a worldwide corporation. The secured area was on the seventh floor of a 31-floor building that housed the company's headquarters.

Since some of the floors in the building were occupied by tenant companies, entrance to the building could not be restricted to people employed by the client company.

On the floor housing the computer operations, we found a uniformed guard at a desk near an entrance door. A sign on the door declared "Computer Area – Authorized Personnel Only."

We were able to walk completely around the service core of the floor using a hallway out of sight of the guard. We found two doors that appeared to be emergency exits from the "Computer Area." Neither could be observed by the guard and both were locked from the outside.

We waited in the hallway. After 18 minutes, one door opened and a young lady came out. We could clearly see that the inside of the door she used was labelled "Emergency Exit Only." When we stepped toward the door, the lady obligingly held it open for us and proceeded to the ladies' room in the service area.

Once inside, we engaged two keypunch operators in a conversation without being challenged by them or anyone. At another desk where a man was working, we used his phone to call our client on another floor.

Again we weren't questioned as to why we were there or who we were.

In this case, a $75 local alarm on the door would have deterred its unauthorized use and secured the computer area.

A chain is only as strong as its weakest link – security should be uniformly tight throughout a given installation. The physical measures used to establish this security will vary only because of the location of the computer within the building or the building's location in the community.

Minimum Measures

The final degree of security established should provide at least:

- Physical protection of the facility from direct outside attack.
- Insurance that only authorized personnel enter the protected area.
- A clearly defined means of entrance and exit and immediate detection and investigation of security breaches.
- Protection maintained on an around-the-clock, seven-days-a-week basis.
- Upgrading and updating of the security system as changes are made.

Several major factors must be considered, studied and analyzed before a security program can be designed. These factors are not very different from those considered in setting up a security program for most other kinds of facilities.

First, I think we must consider the type of business the company is engaged in and the general attitude of the populace toward this activity.

For example, a manufacturer of aerial bombs during the Vietnam conflict was certainly more vulnerable to attack by dissidents than a manufacturer of, say, paper products used by the military.

Secondly, geographical area has to be taken into account. The economic status and the sociological conditions of the immediate neighborhood may have a direct effect upon building design.

If the computer operation already exists, neighborhood conditions may dictate more extreme physical measures to protect the facility, such as installing bars over windows or perhaps even closing the window permanently with bricks or cement blocks.

Third, and of utmost importance, is investigating the background of all applicants for employment in the computer area. Employees assigned to computer operations should be investigated as thoroughly as an engineer applying for a highly sensitive position in a research and development operation.

Fourth, the physical layout of the area must be analyzed. In the majority of high-rise building construction today, particularly where the building is being constructed to house corporate headquarters, plans for the computer operations are included in the overall building plan. But all too often additional security required in these computer areas is not considered during the planning stage.

For example, the restrooms and mail escalators in a normal high rise are found in the service core or outside the office areas on the floor. If the restrooms and mail escalators were inside the protected area on the computer floor, traffic in and out would be reduced immediately. Security would be tighter and easier to manage.

The peripheral walls of the building and all openings in the walls must be considered. Windows within easy reach of ground level must be protected by heavy guage screening, metal bars or even impact-resistant glass.

Every door opening must be protected by either a locking device or a guard. Emergency exists usually can be secured by removing all hardware from outside the door and installing a "deadbolt" lock inside that unlocks when a panic-latch is pushed.

To deter unauthorized use of these exits, either local alarms, remotely monitored alarms, or a combination of both should be installed.

(Continued on Page 28)

In even a modest sized data entry operation, the cost of labor runs up to 80% of the total cost. So when you're looking for improved efficiency, that's the place to look.

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Even Cleaning Crew Should Be Supervised

(Continued from Page 27)

Response to the alarms should be immediate, but in responding don't take the only guard on duty away from the post at the main entrance.

The size of the operation and activity through operational doors will usually dictate whether or not a guard post is necessary. Since posting a guard is the most expensive method of control – although beyond a doubt the best – you may want to consider some other ways to control operational doors.

An anteroom may be constructed at the main entrance with an interlocked door at each end. The chamber can be entered from either direction but the occupant is "trapped" until cleared by closed-circuit television.

Where computer operations are located in a high-rise building and the operations occupy an entire floor, the elevator may be "locked off" at that floor so it can be operated only by personnel issued special keys, electronically read cards or through the use of an electrically operated cipher lock.

With the exception of technicians, repairmen and outside programmers no other visitor should be authorized within the protected computer area.

Cleaning personnel, whether company employees or an outside service, should be accompanied by an in-house supervisor, preferably a member of the guard force, and should remain under close supervision while in the protected area.

If keys are issued to any employee, control must be positive and key inspections should be conducted at least quarterly. Needless to say, recovery of keys from terminated personnel is not enough; key-operated locking devices should be changed or rekeyed.

Other Forms of Protection

Where appropriate, protective lighting of exterior areas should be bright enough to discourage break-ins. The installation of protective lighting should insure that, if any one light goes out, the area remains illuminated by spillage from adjacent fixtures.

Fire protection is normally engineered and installed during construction. However, it may be prudent to check by conducting your own inspection.

The thought of fire always brings to mind evacuation. Evacuation of the area for whatever reason must be supervised and computer operations protected by assigning additional guards or assigning members of management. The emergency evacuation and disaster plan of the facility must make special provisions for the continued protection of the computer during drills or during actual emergencies.

If there is a security force, men or women assigned to the operation should be selected for alertness, determination and dependability. They must be thoroughly trained initially with refresher training conducted at least quarterly.

It is desirable to backup telephone communications among guardposts with radios. During evacuations and actual disasters, telephone communications may not be possible.

Finally, the security program should be tested frequently. Penetration tests by individuals unknown to the security force or to computer management personnel are a good method.

There is, obviously, a great deal more involved in total security of computer operations than what has been discussed here.

If you're worried about security, engage an outside security consultant to survey your computer operations. Often one thoroughly familiar with his own operations cannot "see the tree for the woods."

Strobl, a retired U.S. Army officer, has been in the contract security business for the past 14 years. He is a vice-president of Guardsmark, Inc. and author of the book Security.

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Sensors Monitor Underground Stress

MULLAN, Idaho – Far beneath the surface of the earth in the depths of a silver mine, listening devices linked to a computer monitor the sound of shifting stresses in underground rock.

The sounds, which miners hear coming from the face of the stone, are actually seismic vibrations radiating from tiny earthquakes originating in ground made unstable by the removal of ore.

The minute seismic events are too small in magnitude to affect mine operations but an increase in their frequency at a particular location may signal a buildup in underground strain.

The result could be a rockburst, a sudden release of the accumulated pressure that could be powerful enough to fracture the surface of the stone.

Geologic engineers at the Lucky Friday mine here are using an IBM System/7 to develop a method of calculating the source of the seismic events to pinpoint potential trouble spots. Controlled blasting or placement of supports could then relieve the pressure.

The underground network of monitors consists of 23 sound pickups, called geophones, mounted in the lateral and crosscut tunnels that provide access to the vein of silver-lead ore.

The geophones are connected to the System/7 on the surface through amplifiers, which boost the signal strength 1,000 times, and volt-sensors, which block unwanted background noises.

Fred Brackebusch, who is developing the system for the Hecla Mining Co., owner of the Lucky Friday, explained that when a seismic event takes place, "the noise vibrations are picked up at different times, depending on how far away the particular geophone is located from the source.

"If we get 'hits' on at least five of the phones, the computer goes to work calculating the location by comparing the elapsed times.

"The System/7 automatically prints out where the event took place, the time it occurred and when each geophone picked up the sound. We log the event and plot it on a graph so we can spot developing trends," Brackebusch said.

At the 3,850-foot level of the Lucky Friday silver mine, engineer Jon Langstaff inspects part of a sound sensor embedded in the overhead rock.

How to draft effective legal agreements relating to computer technology.

A one-day workshop for non-legal, technical people.

Because companies want to save legal fees - or because they do not think they can find a lawyer who understands their industry - they often have non-legal technical people draft agreements. This is done both by suppliers and users in the computer industry, and the resulting agreements are used both for specific transactions and as "standard forms". In either case, there can be significant problems. It is easy to overlook important legal points, and the results of such omissions can often be very damaging.

That's why we're presenting this comprehensive one-day workshop on the drafting of effective legal agreements. Although it's impossible to give you full legal knowledge in a short course, we do plan to give you the basic skills necessary to write better legal agreements and to spot items that really require the attention of lawyers.

Our workshop leader is Roy N. Freed, the nationally recognized expert and author in the field of computer law, and leader of our comprehensive seminar "Contracting for Computers and EDP Support Services". Mr. Freed will conduct the workshop with a great deal of interaction among participants, and all participants will receive a complete workbook on the subject. Here are the topics to be covered.

Purposes and Functions of Formal Agreements

- Communication to those who will administer them for each of the parties.
- Scenarios to courts, tax collectors, and other important outsiders

Variety of Formal Agreements

- Purchase and sale of goods or services
- Letter agreements
- Letters of intent
- Purchase orders
- Blanket order agreements
- OEM agreements

Architecture of Agreements

- Contents
- Formal structure
- Internal relationships
- External factors.

Language Caveats

- Legal terminology or legalisms
- Technical terminology, jargon, or buzz words.

Use of Forms, Checklists, and Outlines

- Strengths
- Dangers

Suggested writing style

- Word choice
- Sentence structure
- Definitions
- Body vs. schedules
- Cross references.
- Obligations vs. performance conditions.
- Drafting techniques
- Common bad practices.
- Intentional ambiguities and uncertainties.

Sources of Applicable Legal Rules

- Statutes, such as the Uniform Commercial Code.
- Court decisions
- Enforceable agreements between the parties
- Practices of the party itself
- Custom in the industry.

Significance of Particular Legal Factors

- Scope of work or services.
- Delivery.
- Price
- Performance schedule
- Acceptance
- Warranties.
- Infringement.
- Remedies and liability limitations.
- Taxes

Sources of Assistance

COST AND SCHEDULE

The cost for this one-day workshop is $135, including course materials and luncheon. We'll be offering the workshop at The Sheraton Boston, in Boston on November 20th. Advance registration is required. If you'd like to participate, send in the Registration Form below.

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(Other people from same company)
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Name _____ Title _____

Chess Anyone?

ACM '74 Set to Feature Varied Sessions

SAN DIEGO – ACM '74, the 29th annual technical conference of the Association for Computing Machinery, will be held at the convention center here Nov. 11-13.

Designed to inform "through controversy as well as exposition," David Bulman, technical program chairman, said, the program will feature 13 tutorials and more than 50 other sessions of presented papers and panel discussions.

Topics such as "Computer-Based Conferencing," "Software Physics" and "Privacy and Security" will highlight the three-day program according to ACM.

The conference will open with addresses by Jean Sammet, ACM's president, and keynoter Robert S. Barton of Burroughs Corp.

Turing Award winner Donald E. Knuth of Stanford University will present "Computer Programming as an Art," and the ACM Distinguished Service Award will be presented to Dr. Saul Gorn, professor of the Moore School of Electrical Engineering, University of Pennsylvania.

The Annual U.S. Computer Chess Championship Tournament will be part of the conference for the fifth year, with Larry Atkin, David Slate and Keith Gorlen returning to defend their title.

Societies/ User Groups

In addition, ACM '74 will offer a "Commercial Program" of software and hardware presentations by the computer industry.

The Sheraton-Harbor Island Hotel is the official conference hotel, with additional facilities being provided by the Sheraton Inn Airport and the Travelodge.

For more information, contact Lyn Swan, ACM '74, P.O. Box 9366, 92109; exhibitors should contact Al Gravitt, 2429 Worden St., 92110.

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Industrial Engineers Plan Nov. Conference

NORCROSS, Ga. – "Merging Manufacturing and Information Systems" will be the theme of the American Institute of Industrial Engineers' second annual systems engineering conference on Nov. 6-8 in Minneapolis.

Keynote speaker will be C.M. Harper, group vice-president of the Pillsbury Co.

Conference sessions will focus on four applications of computers in industry: minicomputer systems in manufacturing, integrated systems for materials management, the use of computers in conducting systems studies and the use of computers in management control systems.

Evening seminars will include discussions on computer simulation and optimization methods.

Further information can be obtained from the institute's conference department at 25 Technology Park, 30071.

Calendar

Oct. 27-31, Quebec City – 16th Annual Retail Electronic Data Processing and Telecommunications Conference, sponsored by the National Retail Merchants Association (NRMA). Contact: Irving I. Solomon, Information Systems Division, NRMA, 100 W. 31 St., New York, N.Y.

Oct. 28-31, Notre Dame, Ind. – 1974 International Symposium on Information Theory. Contact: James L. Massey, Department of Electrical Engineering, University of Notre Dame, 46556.

Nov. 5-8, San Diego – 13th Annual Fall Symposium of the Digital Equipment Computer Users Society (Decus). Contact: Maryann Oskirko, Decus, Maynard, Mass. 01754.

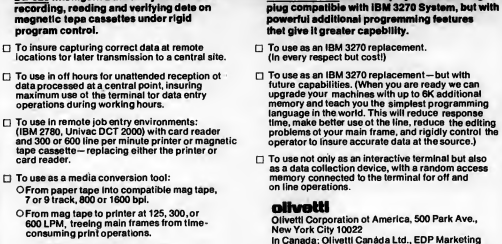
Nov. 7-8, Austin, Texas – Third Texas Conference on Computing Systems, sponsored by the University of Texas. Contact: R.J. Bohlmann, Electrical Engineering Department, University of Texas, 78712.

Nov. 11-13, Silver Spring, Md. – Near Future Prospects For Image Pattern Recognition Workshop, sponsored by the National Science Foundation, Electronics Industries Association and the University of Maryland. Contact: Prof. Laveen Kanal, Department of Computer Science, University of Maryland, College Park, Md. 20742.

Nov. 12-14, Montreal – Fifth Annual Canadian Computer Show and Conference. Contact: Canadian Computer Show and Conference, 625 President Kennedy Ave., Montreal H3A 1K5.

Nov. 12-14, Chicago – Government Management Information Sciences Fall Conference. Contact: James P. Mitchell, CL25-Chicago Datacenter, 60602.

Precisely what are you looking for in an intelligent terminal?



DE-523 Intelligent Data Entry Terminal for recording, reading and verifying data on magnetic tape cassettes under rigid program control.

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- ☐ To use as a media conversion tool:
  - ○ From paper tape into compatible mag tape, 7 or 9 track, 800 or 1600 bpi.
  - ○ From mag tape to printer at 125, 300, or 600 LPM, freeing main frames from time-consuming print operations.
  - ○ From 80 column punched cards into mag tape or printed lists.
- ☐ For commercial banks: installment loan, general ledger, new account data entry applications—and many more uses.
- ☐ For food manufacturing industry: entry of incentive payroll, quality control information—and many more uses.
- ☐ For ocean freight handling: bills of lading, arrival notices, billing, manifest preparation—and many more uses.
- ☐ To use in remote job entry applications—for payroll, accounts receivable, etc.,etc.
- ☐ To use as an intelligent terminal, with powerful program control of data entry, flexible printing and forms handling capability, cassette output, high speed communications— and much more.

TCV 270 Series Video Display Terminal. Plug-to-plug compatible with IBM 3270 System, but with powerful additional programming features that give it greater capability.

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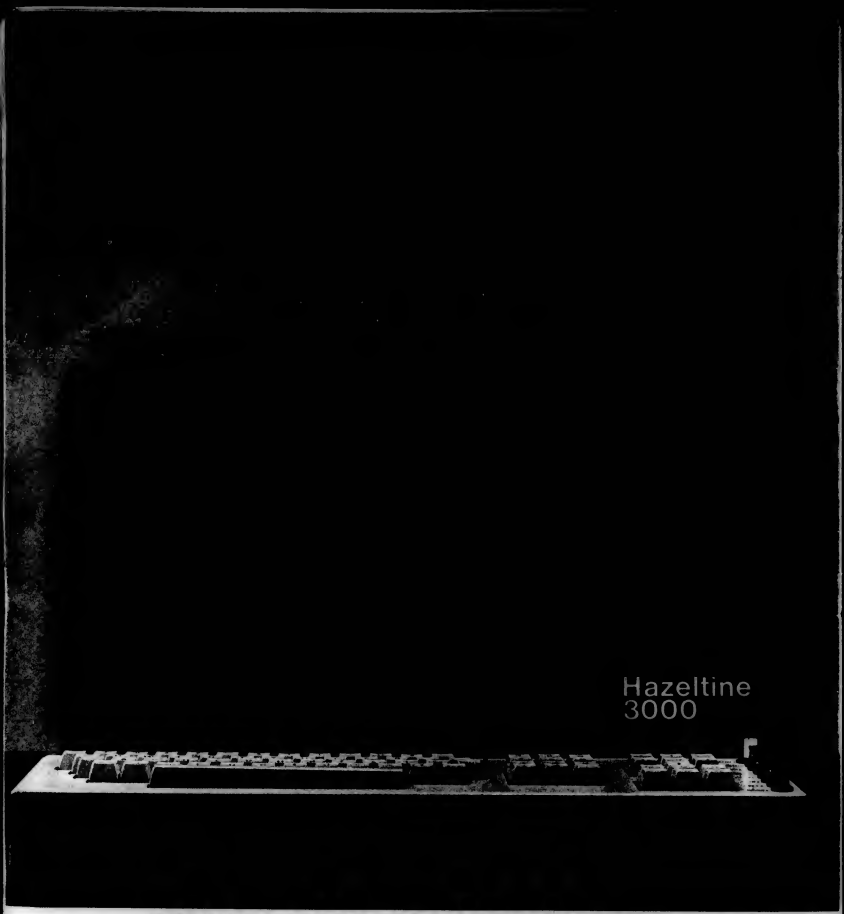

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The Hazeltine 3000 terminal has a programmable microprocessor-based communications interface that makes it compatible with communications disciplines of most computer manufacturers. It has the features that make communicating so much easier—powerful local editing capability, protected formatting with dual-intensity video, full-size 1998-character display, uncluttered moveable keyboard, and a full range of options. It's a "custom" terminal at an "off-the-shelf" price: $125 per month (12-month rental, maintenance included)...and it's backed by worldwide sales, service and technical support from the Company with a half-century of leadership in electronics and displays! Fantastic!

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☐ Houston (713) 783-1760 ☐ Orlando (305) 628-0132. *West:* San Mateo (S.F.) (415) 574-4800 ☐ L. A. (213) 553-1611 ☐ Denver (303) 770-6330 ☐ Seattle (206) 242-0505

COMPUTER INDUSTRY

CI Notes

ICL Announcements Due Soon

LONDON – Two models of the International Computers Ltd.'s (ICL) New Range are expected to be announced later this month.

ICL has reportedly obtained preliminary orders for a 2980 from Bath and Edinburgh universities and for a 2970 from W.H. Smith, a book and news agents chain.

Xoma SDL Suit Dismissed

OTTAWA, Ont. – The Federal Court of Canada dismissed with prejudice the suit brought by Xoma Ltd. against Systems Dimensions Ltd. and Liquid Carbonic Canada Ltd. Xoma, the court said, failed to comply with a court order within the stated time.

In its suit, Xoma had charged patent infringement on an accounting system. The defendants claimed the techniques had been in use several years before the patent was granted.

Army to Install Staran

FT. BELVOIR, Va. – The Army's Engineer Topographic Laboratories here will become the second installation of the Staran S-1000 associative array processor developed by Goodyear Aerospace Corp.

The laboratory has signed a $630,000 leasing agreement with Goodyear with an option to buy.

Quick Tabs on Wescon

LOS ANGELES – Within 16 hours of the close of the Western Electronic Show and Convention (Wescon), show management had a full audit of show attendance, including statistical printouts and visitor "vital statistics."

Total attendance stood at 28,212, up from 27,436 in San Francisco last year. Wescon used the Jacquard computerized registration system.

Supershorts

Computer Automation, Inc. has appointed Data Systems International, Inc. as its distributor in the Republic of the Philippines, Malaysia and Singapore.

– – –

California Data Processors shipped its 1,000th core memory eight months after the firm began its first production year.

– – –

Paradyne Corp. has named Sumitomo Shoji Kaisha Ltd. as its Japanese marketing and service representative.

– – –

Xebec Systems Corp. has begun shipments of the 7000 series 40M-byte disk for minicomputers. The unit combines Control Data Corp.'s 9760 drive with Xebec's XDF-70 formatter.

Software Firms Report Bustling Business

By Nancy French
Of the CW Staff

Despite the softening economy and the proliferation of software houses, business seems to be getting "better and better" for vendors surveyed by *Computerworld* recently.

Marketing managers agreed that not only did business hold through July and August, traditionally slow months, but it grew.

Resistance to software packages is at an all-time low, and "users are interested in hearing about any kind of packages we have," according to George Barlow, Cincom Systems, Inc.

"People are beginning to recognize the kinds of efficiencies, and by that I mean bottom line savings, that accrue from sharing software costs with many people," Barlow said.

Not only that, maintaining a large enough staff to design everything in-house has grown too expensive, he added.

Several trends were noted in the survey. First, users that want to buy are "harder to sell." They are "shopping around."

Paul Starita, vice-president, administration, Innovation Data Processing, said, "Sometimes we find we have to work at two or three levels of management to make a sale.

However, vendors did not agree whether this seemed to be a function of fewer dollars to spend or more alternatives to explore.

Several vendors attribute their record sales to becoming better established – better known by users – especially through user groups such as Share and Guide.

"We've turned that magic corner," Starita said. "In 23 months we've got 870 installations on our Fast Dump Resource Program, and that's a record," he said.

A second trend noted by Barlow is the strong showing that telecommunications packages have made this year.

"They are really taking off – showing the same kind of growth curve that data base had about two years ago," he said.

Both Cincom's Barlow and Rich Melbye, Pansophic Systems, Inc., mentioned the government as an important source of business.

Barlow tied the increase in government business to reduced budgetary authorization for personnel inside the government.

"In the past couple of administrations there's been an increase in spending for outside services," he said.

Melbye said that although Pansophic has been doing most of its business with medium- to large-size shops (370/135s or 360/40s and up), he recently started two salesmen calling on smaller shops.

"In 60 days they've turned over some very interesting stones," he said. "We've got seven new small accounts, and that's pretty significant for two new guys," he remarked.

Melbye noted a trend toward more month to month and annual rentals versus perpetuals.

"This tells me people are very dollar conscious – they don't want to commit themselves today in case they get a reduction in budget – or in case a better mouse trap comes along," he said.

A spokesman for Kranzley and Co., said although they've had the best year ever, they have noted some slow-up in the retail side of the banking business.

"They're taking longer to make a decision and have to justify decisions a little bit better than they did," he explained.

As for small system packages, business there is growing steadily, too.

Rita Coleman, Engineering Computer Systems, Inc., said sales of financial packages to manufacturing concerns have been especially successful this year.

Eugene Jacobs, Group 3, remarked that business is growing. "They have to buy packages – they just don't have the time to do their own," he said.

U.S. Exports of Systems Up 36% As Imports Decline in First Half

By a CW Staff Writer

WASHINGTON, D.C. – U.S. exports of computers, including parts and accessories, rose to $980 million in the first half of 1974 from $719 million in the same period last year, according to the latest figures from the Department of Commerce.

End-user price increases accounted for only a small percentage of this 36% dollar growth in computer exports, the department said, pointing out that advances in technology continue to offset rising labor and materials costs.

Computers represented almost 75% of all business machine exports during the first six months, pushing the balance of trade in business machines 54% higher than last year to $555 million in favor of the U.S.

Imports of computers declined 17% to $54 million in the first half of 1974.

Modems scored the highest rate of growth among several categories. The 1974 figure of $4 million is nearly seven times greater than the year-ago total of $578,000.

The value of shipments for input devices nearly doubled to $36.3 million from $18.8 million, while output devices grew to $36.5 million from $24.4 million, Commerce said.

Combination I/O device shipments grew to $149.7 million from $109.2 million last year.

Shipment values of random-access storage devices jumped to $102.9 million from $63.4 million, outpacing the rate of growth for all other storage devices, which grew to $36.2 million from $29.1 million last year, the report said.

West Germany outdistanced other countries in the importation of U.S. storage devices of all types, with a total value of $23 million. Japan was second with $17.7 million.

The UK led in imports of all types of I/O devices, with a value of $44.2 million compared with Japan's $27.6 million.

Canada, with imports valued at $45.1 million, proved to be the largest market for U.S.-made digital computers, followed closely by Japan with $44 million.

More Protest IBM Satellite Plan

WASHINGTON, D.C. – Government agencies and another computer firm have joined the growing protest surrounding IBM's plans to enter the domestic satellite business with Comsat General Corp. [CW, Oct. 2].

In a recently filed statement with the Federal Communications Commission (FCC), the Federal Trade Commission urged the FCC to deny the application because it could lead to "the complete dominance by CML [Satellite Corp.] of that portion of the specialized communication satellite area devoted to integrated business information handling."

The Justice Department and Sperry Rand told the FCC the matter needs more investigation.

The Justice Department asked the FCC to defer action or deny the application without prejudice, thus allowing resubmission. A delay or denial "would enable the commission to insist that the competitive issues be resolved" before making a decision, the filing said.

Sperry Rand asked to be made a party to the proceedings and told the FCC it should not act on the bare proposal filed, as the proposed venture raises policy issues and leads to a number of regulatory issues which must be examined in depth before the FCC can make an informed judgment on the proposal, the firm said.

Sperry Rand asked the FCC to hold full scale evidentiary hearings.

Under the proposal, IBM would acquire 55% of CML Satellite Corp. with Comsat General the other owner.

The FCC extended to Oct. 17 the deadline for comments by IBM, CML Satellite and Comsat General. Oct. 28 is the deadline for responses to the petitioners' reply comments.

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Europe's largest EDP market has a new newspaper...

It's called *Computerwoche* (woche is pronounced vo-kuh) and it's *Computerworld's* new sister publication for Germany. With a full editorial and production staff in Munich, *Computerwoche* is now serving key computer users in the world's third largest computer market with the latest news on products, services and new computer applications.

Biweekly now, *Computerwoche* will be published weekly in 1975, with a circulation of 22,000, including company officers, managers and top technical people at user sites throughout the German market, as well as officers and planners at computer equipment producing companies. It's a whole new way to reach the people you want to talk to in the large and growing German EDP market.

And another Caravan

Hamburg..... *February 18-20*
Dusseldorf... *February 25-27*
Frankfurt..... *March 4-6*
Stuttgart..... *March 11-13*
Munich ..... *March 18-20*

The travelling Computer Users' Forum and Exposition. The Computer Caravan, will be visiting the German market again in 1975 with a five-city tour of leading German EDP markets.

Thousands of top EDP users will be attending the German Caravan to look at peripherals, minicomputers, terminals, software, services and supplies. And 1975 should be a good year for EDP marketing in Germany, because it should be the first country to come out of the current worldwide recession – thanks to firm anti-inflationary measures applied a year ago. Overall user spending is expected to grow 14% in 1975.

If you're marketing EDP products or services in Germany – or if you'd like to – you should be looking closely at *Computerwoche* and The Computer Caravan. For more information just send in the coupon. Or you may contact Computerworld GmbH, Tegernseer Landstrasse 300, 8 Munchen 90. Phone 089 690 06 51. Telex: 5-28108. It could be die besten tat you did all day.

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CMC Puts Remcom Manufacturing Under One Roof in California

By Molly Upton
Of the CW Staff

MARINA DEL REY, Calif. – Integration of the Remcom base and manufacturing process into the Computer Machinery Corp. (CMC) business plan is proceeding apace. Manufacturing of Remcom's terminals is being relocated from Garland, Texas, to the CMC plant here.

The acquisition of the Remcom base not only increases CMC's current customer base but also enlarges the prospective market, explained Peter Zinsli, vice-president of planning and product operations.

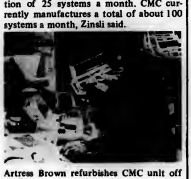
"The external marketplace is broader," he said. Customers with Remcom equipment will be more likely to install CMC key-to-disk units and vice-versa, he said, because they know the company. A single maintenance organization will be responsible for the equipment.

CMC is integrating the service of the Remcom and CMC units and has started cross-training the field services staff, observed Joel D. Leslie, Remcom program manager.

Although CMC services its equipment with its own staff, it has retained independent service organizations in locations where Remcom had contracted for these services. "It is an interesting experiment" to see the independent approach to maintenance along with in-house staff, he said.

Engineering Model of CMC 3

Within a year, CMC expects to be equaling or exceeding Remcom's peak production of 25 systems a month. CMC currently manufactures a total of about 100 systems a month, Zinsli said.



Artress Brown refurbishes CMC unit off lease.

The trend in remote batch units will be toward larger, faster units, noted Zinsli. The advent of IBM's Synchronous Data Link Control (SDLC) should help expand the use of remote batch equipment, he noted, as more data can be transmitted in the same line transmission time.

An extremely attractive feature of CMC's takeover of the Remcom base and the manufacturing rights and tools is that it didn't cost the company any capital, Zinsli noted.

The transaction with Transamerica, from which CMC acquired the base, called for CMC to pay Transamerica a percentage of the profits, but did not require any debt financing, he said.

The CMC-Remcom deal was not the first arrangement between the company and Transamerica, one of its principal lessors. Several years ago CMC agreed to relieve Transamerica of its Redcor Keylogic base, which CMC still supports.

Semiautomatic Wire-Wrap Machine

CW Photos by M. Upton

Engineer sets up 2780 Remcom for training field service.

Terry Wilson tests keyboard electronics.

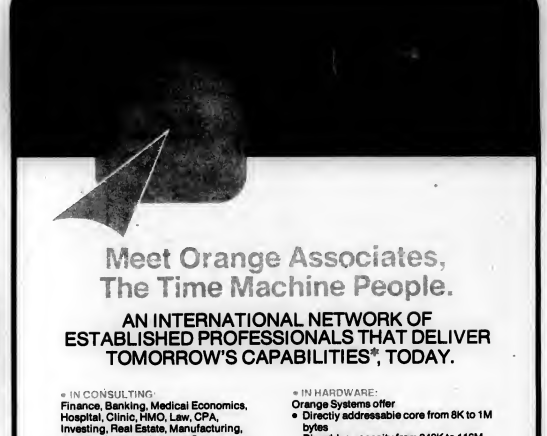
CMC Expects Loss

MARINA DEL REY, Calif. – Computer Machinery Corp. has cut back its domestic work force by 10% and expects a third-quarter loss.

An inability to obtain planned levels of bank borrowings in Europe caused the company to carry a large number of European leases, which adversely affected arrangements with domestic banks and third-party financing sources, according to Thomas L. Ringer, the company's president.

Carrying a larger share of the leases will result in the loss since revenues from current deliveries must be spread over the lease period rather than recognized as sales in the third quarter.

Third-party leasing arrangements are being negotiated. If successful, these could result in recovering much of the anticipated earnings losses by the end of the year, the company said.



DG Hopes to Tap Single Vendor Area

SOUTHBORO, Mass. – The addition of the Eclipse S/100 and S/200 minicomputers will help Data General compete for single vendor contracts with both large data communications and process control users, according to Jit Saxena, senior marketing specialist for the firm.

The Eclipse models are the first of a larger series of Data General computers, Saxena mentioned. The S/100 and S/200 models compare with the Nova 840 in memory size, but offer a larger instruction set and additional features at a lower price, he stated.

Saxena noted that Data General is vertically integrated to the extent that it makes its own core memory and PC boards. He said this helped control costs.

Saxena would not predict an expected sales volume for the S/100 and S/200 models.

True Data Lowers Optical Reader Prices

SANTA ANA, Calif. – True Data Corp. has cut prices on its Series 1 optical data readers and is jumping into the end-user market.

The model that reads punched cards now costs about $1,500 and the unit that reads punched cards as well as marked cards sells for about $1,650. Prices formerly ranged from $2,095 to $2,795, the firm said.

True Data has established the cost of the products, built its volume production to the point where it gets discounts on parts and feels it can pass on the savings to the user, according to William Job, vice-president of marketing.

The reason for entering the end-user market is to gain exposure and insight into new technologies, he said.

True Data currently supplies readers on an OEM basis and takes special orders from systems houses.

The firm's representatives will market the units and provide field service. True Data offers a one-year warranty on parts and labor, Job said.

New markets for optical data readers could include turnpike toll booths, point-of-sale systems and other applications where the card is retained as the original document.

Although three or four years ago the card industry seemed to be on the way down because of key-to-disk/tape systems, the market for card systems is being revitalized as the card becomes the original document.

True Data is thinking of expanding its product line in "the data gathering area," Job said.

Cakomp Raises OEM Prices

ANAHEIM, Calif. – California Computer Products, Inc. (Calcomp) raised prices of memory products sold to original equipment manufacturers (OEMs) approximately 5% to 10% effective Sept. 30.

"Cumulative increases in material and labor costs over the past five years dictate a price increase at this time" for OEM disk drives, tape drives and floppy disk drives, President Lester L. Kilpatrick said.

Calcomp also raised prices on its end-user memory products [CW, Oct. 9].

I/O Devices Closes; All But IOP-8 Sold

MOUNTAIN LAKES, N.J. – I/O Devices, Inc. has closed its doors, leaving two directors nominally in possession of the corporate name.

All tangible assets have been sold except the IOP-8, for which the firm has received an offer of $20,000 in cash and a promise to pay royalties.

However, royalty payments are unlikely to cover the remaining company debts, which are expected to be $600,000, former treasurer Rodney S. Larchuk said.

I/O distributed the $100,000 received in a transaction with Interdata, Inc. by paying creditors of under $100 the full amount, those over $100 50% of their claims and the balance to the remaining creditors.

Ludwig J. Kapp resigned as president, and Kenichi Ichihashi, a director, was elected president. Larchuk resigned as secretary and treasurer and was replaced by Shinzou Momota, also a director.

The company discontinued marketing the Model 100 printer in February because of costs of production in Japan, operating deficits and a shortage of operating funds [CW, Feb. 13].

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Executive Corner

Younger Team Takes Charge at Honeywell

MINNEAPOLIS – In a changing of the guard, Honeywell, Inc. has brought to the fore its younger management team.

Edson W. Spencer, formerly executive vice-president of the firm's control systems operations, was named president and chief executive officer, succeeding Stephen F. Keating who becomes chairman of the board.

Clarence W. Spangle has been elected president of Honeywell Information Systems, Inc. and remains an executive vice-president of Honeywell, Inc. Spangle has been responsible for computer operations since 1971.

James H. Binger, chairman of the board since 1965, becomes chairman of the board's executive committee.

Keating and Binger will continue to play "an active day-to-day role in Honeywell's management." Keating said both he and Binger had decided "some time ago that their successors should be named in advance of normal retirement." Binger is 58 and Keating is 56. Spencer and Spangle are 48 and 49, respectively.

DG Vice-Presidents Named

Data General has named Carl D. Carman as vice-president, responsible for directing and coordinating engineering projects. James P. Campbell was named vice-president in charge of personnel activities.

Other Moves

■ Dearborn Computer Leasing has announced several management changes: Orville A. Wiseman to vice-president, systems support; Louis Haberbeck Jr. to vice-president, computer services; and Arthur W. Johnson to vice-president, computer brokerage activity.

■ Col. Robert J. Latina has been appointed to head the Automatic Data Processing Equipment Selection Directorate at the Electronic Systems Division of the Air Force Systems Command.

Action Intensifies in 'San Jose 11' Case

SAN JOSE, Calif. – The ripples have spread from the stone cast in the original case of the San Jose 11 accused in July 1973 of stealing trade secrets from IBM.

One of the remaining five persons awaiting trial entered a plea of guilty to two counts of stealing trade secrets and one charge of attempting to bribe an employee.

Phillip Steckel, a retired IBM buyer, pleaded guilty to stealing material on the IBM 3330 (Merlin) disk pack, drawings on Memorex's 651 flexible disk drive and trying to bribe an employee to elicit trade secrets, according to the district attorney's office.

Steckel will testify for the prosecution in the trial set for Nov. 12.

The remaining defendants include Ramon Serrata, IBM engineer; Adolf Jarmann, an engineer employed at K&K Manufacturing, Inc.; and Thomas Finnegan, a former Memorex buyer. Charges against six other defendants were dropped previously and one remains at large [CW, April 17, May 1].

Steckel's attorney had earlier entered a motion for the dismissal of all charges, contending IBM had created its own espionage ring [CW, Feb. 6]. The motion was denied.

In other developments concerning former defendants, IBM filed a counterclaim against Phillip J. Kronzer, vice-president of K&K Manufacturing, charging him with using secret IBM documents for his personal benefit. Kronzer is suing IBM for $160 million, charging malicious prosecution. Charges against Kronzer were dismissed [CW, May 1].

K&K manufactured the 2314 carriage assembly for IBM.

The IBM countersuit charged that K&K "revealed to others, including competitors of IBM the contents of said documents and utilized said documents to manufacture on its own behalf said parts for the purpose of selling said parts to others, including competitors of IBM."

The counterclaim also alleged Kronzer and other K&K employees violated a nondisclosure agreement by using documents given them by IBM for their personal benefit.

IBM asked the court to determine damages at a later date and also seeks to be paid the amount K&K received from the sale of 2314 carriage assemblies. IBM also asked for all documents and drawings belonging to it currently in the possession of K&K.

In his original suit against IBM, Kronzer claimed his sole connection with the trade secrets case was "that he has been engaged for a number of years in the manufacture of carriage assemblies for a disk drive . . ."

OEM Products

CRT Operates On-, Off-Line

PLAINVIEW, N.Y. – The Ontel Programmatic 1 intelligent CRT terminal is designed for stand-alone operation or as an on-line system.

All I/O disciplines are program controlled, enabling the system to operate with various host computers, the firm said.

The display microprocessor can perform fast roll-scroll and erase operations as well as cursor movements, blinking and screen reversal.

Up to 16K bytes are available in increments of 4K bytes. An asynchronous channel can operate in either full- or half-duplex up to 9,600 bit/sec.

The basic 4K unit sells for $3,670 in single quantities with quantity discounts available from the company at 3 Fairchild Court, 11803.

Other OEM Products

American Magnetics Corp.'s hand-operated portable Model 10 magstripe card reader reads encoded information in several stripe formats. The typical read cycle time is 2 sec.

The Model 10 is priced under $50 in production quantities from 2424 Carson St., Torrance, Calif. 90501.

– – –

Elcom Industries, Inc.'s magnetic stripe reader is available with an electronic output that converts magnetic encoding to a clocked, digital bit serial signal. Mechanisms cost $90 each from 10277 Bach Blvd., St. Louis, Mo. 63132.

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Datronic Rental Corp. changed its method of depreciating computer equipment from the straight line to the accelerated method, which resulted in additional depreciation of $1.7 million on years prior to June 30, 1973. On a pro forma basis, assuming the depreciation method is applied retroactively, earnings for 1974 totaled $195,851 on revenues of $4.7 million.

$$$

The Mentor Corp. is losing two of its largest customers, the National Bank of Tulsa and The Williams Companies, which last year accounted for 66% of Mentor's revenues. Mentor management said it is evaluating the effect of the loss of business and evaluating alternatives.

$$$

The contract backlog at Kappa Systems, Inc., a systems analysis and management consulting firm, totaled $2.4 million as of June 30, a record high. The figure for June 30, 1973 was $1.5 million.

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Shugart Associates sold $3.35 million of securities to a group of private investors. Proceeds will be used to replay loans and for working capital.

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Other T/S Firms Show Healthy Jumps

NCSS Guarded About Increased Revenues

Three time-sharing firms reported increased revenues and earnings: On-Line Systems, Inc. witnessed a record first quarter ended July 31; earnings soared at Com Share, Inc. for the year ended June 30; and National CSS (NCSS) reported a 49% increase in revenues for the second quarter ended Aug. 31.

However, NCSS said it has spotted softening of revenues and has cut its work force by about 8%. The company said it is also reducing its revenue and earnings expectations for the remainder of the year.

The softening "appears to be attributable to this difficult economic period and to unanticipated hardware reliability problems with our new IBM 370/168. New account sales, however, are continuing at normal levels," said President Richard H. Orenstein.

NCSS is taking steps to increase the productivity of its marketing force, placing greater emphasis on field and support personnel, specific product sales and a continuing systems marketing effort, he said. Steps have been taken to resolve the hardware reliability problem, he added.

For the second quarter, NCSS revenues grew 49% to $8.4 million from nearly $5.7 million last year. Earnings rose to $483,406 or 44 cents a share compared with $430,395 or 40 cents a share in the year-ago period, when there was a $52,200 tax credit.

For the six months, NCSS revenues totaled $16.7 million compared with $10.9 million in the year-ago period.

Earnings reached $946,489 or 86 cents a share compared with $817,679 or 75 cents a share, which includes a $104,400 tax credit.

At On-Line, gains posted by the company more than offset the loss of revenues caused by the termination of the Cost of Living Council (CLC) account, which was phased out in June.

During prior years, a significant portion of the firm's time-sharing business was from the CLC, according to President Jack Roseman. During the first quarter of this year it accounted for 6.5% of total revenues, he noted.

Earnings for the Pittsburgh firm totaled $427,210 or 51 cents a share compared with $262,752 or 33 cents a share in the same period a year ago.

Revenues rose 58% to nearly $3 million from almost $2 million last year.

Com Share, Inc.'s 1974 revenues totaled $9.5 million, up from $8.5 million in 1973. Earnings, including a $778,000 tax credit, totaled $1.6 million or $1.24 a share compared with $437,000 or 34 cents a share.

AJ Continues Trend

Set by Year Results

SUNNYVALE, Calif. — Continuing the trend set by its record showing for the year, Anderson Jacobson, Inc.'s first-quarter earnings jumped 65% and revenues 42% over those of the year-ago period.

Earnings for the period ended June 30 rose to $152,485 or 6 cents a share compared with $92,000 or 4 cents a share in the same period last year.

Revenues jumped 42% to $2.7 million from $1.9 million.

Lease and service revenue reached almost $2.3 million, or 83% of total revenue, which is a 51% improvement over last year.

The company also announced it secured a $6 million line of credit from Crocker Bank and Crocker McAlister Equipment Leasing, Inc., which will be used to finance equipment placed on lease.

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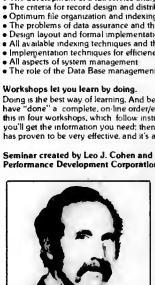

We selected this seminar for inclusion in the EDP Seminar Series after watching it in action. It was developed by Performance Development Corporation under the direction of its President, Leo J. Cohen, a nationally known consultant in data base systems. Mr. Cohen will continue as seminar director, and the seminar leaders are PDC staff who are experts in their own right. They include Alan Stutz and Steve Robinson, both of whom are well known for their work in this area. All instructional staff have been involved in design and implementation of a variety of data base systems for major U.S. computer using organizations.

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Telephone ( ) _____

Earnings Reports

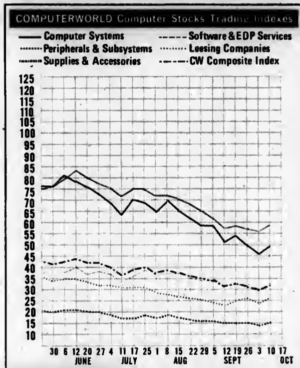
TRACOR
Three Months Ended June 30

	1974	e1973
Shr Ernd	$.46	$.77
Revenue	24,386,000	20,227,000
bSpec Cred	553,000	1,235,000
Earnings	1,114,000	1,663,000
6 Mo Shr	.63	1.24
Revenue	45,518,000	41,196,000
bSpec Cred	954,000	1,770,000
Earnings	2,018,000	2,996,000

e-includes results of Astro-Science Corp. subsidiery, disposed of in May 1973. b-In 1974, includes tax-loss carryforward credit and equity in extraordinary gains of affiliates; in 1973, includes tax-loss carryforward credit, equity in extraordinary gains of affiliates and gain on disposition of certain subsidiaries and investments.

COMTEN
Three Months Ended June 30

	1974	1973
Shr Ernd	$.24	$.06
Revenue	3,334,905	2,210,503
Tax Cred	244,406	27,000
Earnings	494,966	131,467
6 Mo Shr	.24	.03
Revenue	5,617,280	3,697,710
Tax Cred	245,000	27,000
Earnings	497,532	70,825



TYMSHARE
Three Months Ended June 30

	1974	1973
Shr Ernd	$.21	$.13
Revenue	7,680,960	5,789,360
Earnings	642,707	400,358
6 Mo Shr	.40	.30
Revenue	15,091,459	11,172,597
Tax Cred	.....	172,000
Earnings	1,223,040	907,691

WANG LABORATORIES
Year Ended June 30

	1974	1973
Shr Ernd	$1.20	$.62
Revenue	63,358,000	47,704,000
Earnings	4,869,000	3,293,000
3 Mo Shr	.46	.36
Revenue	19,507,000	14,710,000
Earnings	1,863,000	1,533,000

WYLE LABS
Three Months Ended July 31

	1974	1973
Shr Ernd	$.26	$.28
Revenue	33,668,000	29,560,000
Tax Cred	.....	465,000
Earnings	882,000	969,000
6 Mo Shr	.46	.52
Revenue	67,795,000	57,329,000
Tax Cred	.....	875,000
Earnings	1,647,000	1,607,000

GENERAL DATACOMM INDUSTRIES
Nine Months Ended June 30

	1974	1973
Shr Ernd	$.40	$.25
Revenue	7,409,624	4,905,696
Tax Cred	286,460	179,000
Earnings	561,930	372,733

KEANE ASSOCIATES
Three Months Ended June 30

	1974	a1973
Shr Ernd	$.13	$.11
Revenue	1,069,000	942,000
Earnings	110,000	96,000
6 Mo Shr	.24	.22
Revenue	2,053,000	1,836,000
Earnings	200,000	167,000

e-Restated to exclude revenue from discontinued operations.

DECISION DATA
Three Months Ended June 1

	1974	1973
Shr Ernd	$.07	.....
Revenue	9,932,000	3,929,000
Tax Cred	126,000	.....
Earnings	270,000	(266,000)
6 Mo Shr	$.11	.....
Revenue	17,166,000	7,303,000
Earnings	411,000	(662,000)

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Computerworld Stock Trading Summary

TRADE*QUOTES

All statistics compiled, computed and formatted by TRADE*QUOTES, INC. Cambridge, Mass. 02139

COMPUTER SYSTEMS

EXCH		1974 RANGE (1)	CLOSE OCT 10 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	BURROUGHS CORP	63-217	70 1/4	+7 1/4	+11.5
O	COMPUTER AUTOMATION	4- 14	4 1/8	+ 1/4	+8.4
N	CONTROL DATA CORP	13- 38	13 1/2	+ 7/8	+6.9
N	DATA GENERAL CORP	13- 38	12 1/2	- 3/8	-2.9
O	DATAPOINT CORP	7- 15	7 1/2	0	0.0
O	DIGITAL COMP CONTROL	2- 5	2 1/8	+ 1/4	+13.3
N	DIGITAL EQUIPMENT	58-121	57 1/2	-5 1/4	-8.3
N	ELECTRONIC ASSOC.	2- 3	2	+ 1/4	+14.2
A	ELECTRONIC ENGINEER.	5- 11	5 3/8	- 1/8	-2.2
N	FOXBORO	19- 48	25	+5 3/4	+29.8
O	GENERAL AUTOMATION	12- 40	11 3/4	-2 1/2	-17.5
O	RRI COMPUTER CORP	1- 2	1/4	- 1/4	-50.0
N	HEWLETT-PACKARD CO	58- 90	64 3/4	+7 1/8	+12.3
N	HONEYWELL INC	23- 86	27 3/8	+2 7/8	+11.7
N	IBM	152-251	176 1/8	+18 3/8	+11.6
O	INTERDATA INC	8- 22	15 5/8	+2 1/8	+15.7
O	MICRODATA CORP	2- 5	2	+ 1/8	+6.6
N	NCR	19- 40	21 1/8	+2 1/2	+13.4
N	RAYTHEON CO	21- 39	23 5/8	+2 5/8	+12.5
N	SINGER CO	14- 48	18	+2 3/8	+17.4
N	SPERRY RAND	24- 44	26	+1 1/2	+8.1
A	SYSTEMS ENG. LABS	1- 3	1 3/8	+ 1/8	+10.0
N	TEXAS INSTRUMENTS	80-115	63 1/2	+2 1/8	+3.4
O	ULTIMACC SYSTEMS INC	1- 2	3/4	- 1/8	-14.2
N	VARIAN ASSOCIATES	6- 13	7 1/4	+1 1/8	+18.3
N	WANG LABS.	7- 20	10 1/2	+2 5/8	+33.3
N	XEROX CORP	61-127	72 1/2	+9 3/4	+15.5

LEASING COMPANIES

EXCH		1974 RANGE (1)	CLOSE OCT 10 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	BRESNAHAN COMP.	2- 2	2 1/8	0	0.0
O	COMDISCO INC	1- 7	1 1/2	0	0.0
A	COMMERCE GROUP CORP	3- 6	2 7/8	- 1/8	-4.1
O	COMPUTER EXCHANGE	1- 1	1/8	0	0.0
A	COMPUTER INVSTRS GRP	1- 4	5/8	- 1/8	-16.6
O	COMP. INSTALLATIONS	1- 1	1/4	0	0.0
M	DATRONIC RENTAL	1- 1	7/8	0	0.0
A	DCL INC	8- 1	3/8	+	+16.7
M	DPF INC	2- 5	2 5/8	+ 1/4	+10.5
O	EDP RESOURCES	2- 3	3 1/4	0	0.0
A	GRANITE MGT	1- 3	7/8	+ 1/8	+27.1
A	GREYHOUND COMPUTER	2- 6	2 5/8	+ 3/8	+16.6
A	ITEL	3- 6	3 5/8	+ 5/8	+20.8
N	LEASCO CORP	5- 12	8 1/8	+1 1/4	+18.1
O	LEASPAC CORP	0- 2	3/8	- 1/8	-25.0
O	LECTRO MGT INC	1- 1	1/8	0	0.0
O	NRG INC	1- 5	2 1/8	+ 1/8	+6.2
A	PIONEER TEX CORP	2- 10	2 7/8	+ 1/4	+9.5
A	ROCKWOOD COMPUTER	1- 1	1/2	+	+12.5
N	U.S. LEASING	5- 24	9 1/8	+2 3/4	+43.1

EXCH: N=NEW YORK; A=AMERICAN; M=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

SOFTWARE & EDP SERVICES

EXCH		1974 RANGE (1)	CLOSE OCT 10 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	ADVANCED COMP TECH	1- 2	5/8	0	0.0
A	APPLIED DATA RES.	1- 3	1 1/4	- 1/4	-18.8
O	APPLIED LOGIC	1- 1	1/8	0	0.0
N	AUTOMATIC DATA PROC	21- 57	26 1/2	+3 3/4	+16.4
O	BRANDON APPLIED SYST	1- 1	1/4	+ 1/8	+100.0
O	CENTRAL DATA SYSTEMS	4- 6	3	0	0.0
O	COMPUTER DIMENSIONS	1- 3	1 1/2	0	0.0
O	COMPUTER HORIZONS	1- 5	1 1/4	+ 1/4	+25.0
O	COMPUTER NETWORK	1- 2	1	0	0.0
N	COMPUTER SCIENCES	2- 4	2 1/4	0	0.0
O	COMPUTER TASK GROUP	1- 1	3/4	0	0.0
O	COMPUTER TECHNOLOGY	1- 1	1/2	0	0.0
O	COMPUTER USAGE	2- 4	2 5/8	+ 1/8	+5.0
O	COMRESS	1- 1	1/4	0	0.0
O	COMSHARE	2- 4	1 5/8	0	0.0
N	COMPUTA CORP	2- 4	1 3/4	+ 1/8	+7.6
O	DATATAB	1- 3	1 1/4	0	0.0
A	ELECT COMP PROD	1- 1	1/8	0	0.0
N	ELECTRONIC DATA SYS.	12- 25	12	- 1/2	-4.0
O	INFONATIONAL INC	1- 2	1/2	0	0.0
O	I.D.A. DATA CORP	1- 1	1/4	0	0.0
O	IPS COMPUTER MARKET.	1- 1	1/2	- 1/4	-33.3
O	KEANE ASSOCIATES	2- 4	1 3/4	0	0.0
O	KEYDATA CORP	1- 6	1 3/4	+ 1/2	+40.0
O	LOGICON	2- 5	2 1/8	0	0.0
R	MANAGEMENT DATA	1- 2	1	0	0.0
O	NATIONAL CSS INC	0- 37	9	-1	-10.0
O	NATIONAL COMPUTER CO	1- 1	1/4	0	0.0
A	ON LINE SYSTEMS INC	18- 30	20 3/4	+1 5/8	+8.4
N	PLANNING RESEARCH	2- 3	2 3/8	+ 1/4	+11.7
O	PROGRAMMING & SYS	1- 1	5/8	0	0.0
O	RAPIDATA INC	1- 5	1 3/4	+ 3/4	+75.0
O	SCIENTIFIC COMPUTERS	1- 1	5/8	0	0.0
O	SIMPLICITY COMPUTER	1- 1	3/8	+ 1/8	+50.0
O	TCC INC	1- 1	1/4	0	0.0
O	TYMSHARE INC	6- 12	8	+ 3/8	+6.8
O	UNITED DATA CENTER	2- 4	1 3/4	0	0.0
A	URS SYSTEMS	2- 4	2 1/8	+ 3/8	+21.4
N	WYLY CORP	2- 5	2 1/8	+ 1/4	+13.3

PERIPHERALS & SUBSYSTEMS

EXCH		1974 RANGE (1)	CLOSE OCT 10 1974	WEEK NET CHNGE	WEEK PCT CHNGE
N	ADDRESSOGRAPH-MULT	4- 11	4 7/8	+1	+25.8
O	ADVANCED MEMORY SYS	1- 7	1 1/4	- 1/8	-9.8
N	AMPEX CORP	3- 5	3 5/8	+ 5/8	+20.8
O	ANDERSON JACOBSON	2- 4	1 3/4	- 1/4	-12.5
O	BEEHIVE MEDICAL ELEC	2- 7	3	+ 1/4	+9.0
A	BOLT,BERANEK & NEW	5- 9	5 3/8	+ 5/8	+13.1
N	BUNKER-RAMO	4- 8	6 7/8	+ 1/4	+5.4
A	CALCOMP	5- 11	6 1/4	+ 1/4	+4.1
O	CAMBRIDGE MEMORIES	4- 16	5 1/4	+ 1/2	+10.5
O	CENTRONICS DATA COMP	7- 23	9 1/2	+1	+11.7
O	CODEX CORP	8- 15	12 1/4	+2 1/4	+22.5
O	CORNITRONICS	1- 2	1/2	0	0.0
O	COMPUTER COMMUN.	1- 2	1/4	- 1/8	-33.3
A	COMPUTER EQUIPMENT	1- 2	1 1/4	+ 1/8	+11.1
O	COMPUTER MACHINERY	1- 5	1 3/4	+ 1/2	+40.0
O	COMPUTER TRANSCEIVER	1- 2	7/8	0	0.0
N	CONRAC CORP	10- 22	11 7/8	+ 5/8	+5.5
O	DATA ACCESS SYSTEMS	2- 3	2 1/2	0	0.0
O	DATA 100	5- 13	5 5/8	+ 3/8	+7.1
A	DATA PRODUCTS CORP	3- 4	3	+ 1/4	+9.0
O	DATA RECOGNITION	1- 1	1/4	0	0.0
O	DATA TECHNOLOGY	2- 4	2	+ 1/4	+14.2
O	DECISION DATA COMPUT	3- 13	5	+ 3/8	+8.1
O	DELTA DATA SYSTEMS	1- 2	5/8	0	0.0
O	DI/AN CONTROLS	1- 2	5/8	+ 1/8	+25.0
N	ELECTRONIC M & M	2- 4	1 3/4	+ 1/8	+7.6
O	FABRI-TEK	1- 3	3/4	- 1/8	-14.2
O	GENERAL COMPUTER SYS	1- 4	1 1/4	0	0.0
N	GENERAL ELECTRIC	30- 65	37 5/8	+4 1/4	+12.7
N	HAZELTINE CORP	3- 7	3 1/8	+ 1/8	+4.1
O	INFOREX INC	2- 5	2 3/8	0	0.0
O	INFORMATION DISPLAYS	1- 1	1/8	0	0.0
O	INFORMATION INTL INC	7- 14	7	+ 1/4	+3.7
A	LUNDY ELECTRONICS	3- 3	2 7/8	0	0.0
O	MANAGEMENT ASSIST	1- 1	1/8	0	0.0
N	MEMOREX	2- 5	2 3/8	+ 1/8	+5.5
A	MILGO ELECTRONICS	6- 18	7	+ 3/4	+12.0
N	MOHAWK DATA SCI	1- 4	1 3/4	0	0.0
O	ODEC COMPUTER SYST.	1- 3	1	0	0.0
O	OPTICAL SCANNING	3- 6	3 1/2	0	0.0
O	PERTEC CORP	2- 6	2 1/8	- 3/8	-15.0
A	POTTER INSTRUMENT	1- 5	1 3/4	+ 1/8	+7.8
O	PRECISION INST.	1- 3	3/4	0	0.0
O	QUANTOR CORP	2- 8	2 1/4	+ 1/4	+12.5
O	RECOGNITION EQUIP	8- 5	1 7/8	+ 3/8	+25.0
N	SANDERS ASSOCIATES	2- 8	3	+ 1/2	+20.0
O	SCAN DATA	1- 2	1	0	0.0
O	STORAGE TECHNOLOGY	7- 15	8 3/4	+1 3/4	+25.0
O	SYCOR INC	4- 13	6	+1 1/2	+33.3
O	TALLY CORP.	2- 4	1 7/8	+ 1/8	+7.1
O	TEC INC	2- 7	2 1/4	+ 1/4	+12.5
N	TEKTRONIX INC	22- 48	23 1/2	+1 1/8	+5.0
N	TELEX	3- 4	3 1/2	- 1/2	-12.5
O	WANGCO INC	5- 13	4 3/4	0	0.0
O	WILTEK INC	2- 8	2	+ 1/4	+14.2

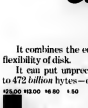
SUPPLIES & ACCESSORIES

EXCH		1974 RANGE (1)	CLOSE OCT 10 1974	WEEK NET CHNGE	WEEK PCT CHNGE
O	BALTIMORE BUS FORMS	4- 6	4 1/2	0	0.0
A	BARRY WRIGHT	4- 7	4 3/8	+ 3/8	+9.3
O	CYBERMATICS INC	1- 2	5/8	0	0.0
A	DATA DOCUMENTS	23- 54	29	+1 3/4	+6.4
O	DUPLEX PRODUCTS INC	6- 17	13	+1 3/4	+15.5
N	ENNIS BUS. FORMS	4- 7	5 1/4	+ 1/4	+5.0
O	GRAHAM MAGNETICS	6- 11	6 3/4	+ 1/2	+8.0
O	GRAPHIC CONTROLS	6- 11	6 1/4	+ 1/4	+4.1
N	3M COMPANY	47- 70	54 3/8	+6 7/8	+14.4
O	MOORE CORP LTD	33- 57	38 1/2	+5 1/4	+15.7
N	NASHUA CORP	24- 45	26	+1 1/4	+5.0
O	REYNOLDS & REYNOLDS	8- 35	10 1/2	+ 1/2	+5.0
O	STANDARD REGISTER	10- 16	11 1/4	+ 1/4	+2.2
O	TAB PRODUCTS CO	5- 11	4 3/4	- 1/4	-5.0
N	UARCO	13- 23	14 7/8	+ 7/8	+8.2
A	WABASH MAGNETICS	3- 7	3 1/2	+ 1/2	+18.8
N	WALLACE BUS FORMS	14- 24	15	-1 3/4	-10.4

New IBM system gives direct access to massive amounts of stored data.

It combines the economy of tape processing with the flexibility of disk.

It can put unprecedented volumes of data—from 35 to 472 *billion* bytes—on line to the computer.



It can end practically all manual handling of tape reels and disk packs and greatly lower the cost of maintaining a library.

And it can dramatically reduce the actual monthly cost for storing a megabyte of data down into the 20-to-50 cent range.

In essence, the IBM 3850 Mass Storage System is for organizations that need computer access to vast numbers of different records. The 3850 acts like a very large lending library for IBM 3330 Disk Storage. Data stored in the system's data cartridges is temporarily transferred to the disks for direct computer use. The system runs automatically, with practically no manual intervention required.

For large installations

With its massive amounts of economically stored data on line, the 3850 is well suited to a variety of large organizations.

Among them may be banks, for check records; utilities, for engineering records; manufacturers, for sales history data; organizations referencing lengthy texts, such as medical records; and many others.

Such users can benefit from the new accessibility of their files. At the same time, they can hold down costs through reduced tape and disk inventories and handling, as well as more efficient computer system use.

Because it vastly reduces the cost of storing data, the 3850 can improve productivity by removing restraints that may have hampered the start of new applications. Conversion of existing installations to 3850 storage is essentially a tape-to-disk procedure, with few or no programming changes necessary.

Improved physical data security is another benefit, since extensive data files formerly in library areas can now be contained in one place. Other safeguard options are intended to bar unauthorized system use through user-defined passwords; prevent unauthorized alteration or removal of data, and limit access to data to one user at a time.

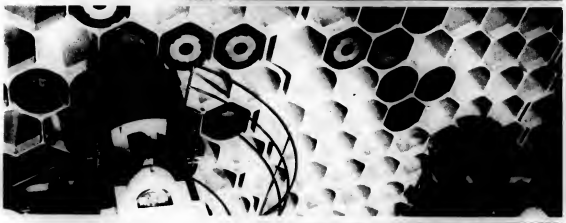
One or two 3850s can be linked to as many as four virtual storage IBM System/370 computers, Models 145 through 168.

Not so long ago, the introduction of virtual storage provided greatly increased storage capabilities for System/370 computers. And Advanced Function for Communications, which is a logical extension of the virtual storage base, provides one teleprocessing network for many uses. Now the 3850 Mass Storage System extends the virtual storage concept to direct access storage devices.

Virtual Storage, Advanced Function for Communications, the Mass Storage System—three powerful links to the computing potential of the Seventies.

For further information, contact your local IBM Data Processing Division office. Or write IBM Corporation, Dept. 83F-CW, 1133 Westchester Avenue, White Plains, N.Y. 10604.

The IBM 3850 Mass Storage System uses a new data cartridge, approximately two inches in diameter and four inches long, which can hold up to 50 million bytes. Two cartridges have a storage capacity equal to that of an IBM 3336 Model 1 Disk Pack—100 million bytes.



Inside the system, the cartridges are stored in a "honeycomb" of cells. When data is needed for processing, a cartridge is removed from its cell by an automatic mechanism and the data is temporarily read onto an IBM 3330 Disk Storage for computer use.

The IBM 3850 Mass Storage System, shown at the far end of this room, is linked to the IBM 3330 Disk Storage (right), which in turn is on line to a virtual storage IBM System/370. Maximum capacity of the 3850 system is 472 billion bytes.

IBM
Data Processing Division